Hospital Library

MAR 11 1935

VOLUME X • NUMBER 6

JOURNAL *of the* AMERICAN DIETETIC ASSOCIATION

March, 1935

A Study of Food Freely Selected by a College Coöperative Housekeeping Group
RUTH WHEELER AND RUTH MALLAY

Administrators Wanted
LORENA RICHARDSON

The Dietitian as an Administrator
ERWIN H. SCHELL

Endogenous Factors in the Control and Arrest of Dental Caries
CHARLES L. DRAIN AND JULIAN D. BOYD

Recent Trends in Vitamin Research
R. ADAMS DUTCHER

Next Annual Meeting, Cleveland, Ohio, October 27 to 31, 1935

THE AMERICAN DIETETIC ASSOCIATION
Business Office: MOUNT ROYAL AND GUILFORD AVENUES, BALTIMORE, MARYLAND
Advertising and Subscription Offices: 185 N. WABASH AVENUE, CHICAGO, ILLINOIS

VOLUME X · March, 1935 · NUMBER 6

JOURNAL *of the* AMERICAN DIETETIC ASSOCIATION

A STUDY OF FOOD FREELY SELECTED BY A COLLEGE COÖPERATIVE HOUSEKEEPING GROUP[1]

RUTH WHEELER AND RUTH MALLAY

Institute of Euthenics, Vassar College

PERSONNEL

IN 1933 and 1934, nine seniors, eleven juniors, and eight sophomores, chosen from 76 applicants unexpectedly faced by the necessity of earning a large part of their expenses or discontinuing their college course, undertook coöperative housekeeping in Blodgett Hall of Euthenics, an academic building on the campus of Vassar College. The basis for selection was in this order: financial need, academic standing, health, probable ability to live happily in such a group, housekeeping experience. Major academic interests of the twenty-eight covered art, music, physical and biological sciences, ancient and modern languages, and the humanities, an excellent cross-section of the community. Two students had had some experience in camp cooking, two had done all the family housekeeping in vacation periods, nearly all had made an effort to get some experience in the preceding summer, but several had never prepared a meal. The Blodgett experiment was to cover planning of meals, ordering of food, cooking, cleaning of all rooms and corridors used, and detailed recording of all purchases.

RESOURCES

Blodgett Hall contains a large kitchen, well equipped (for classes in the Summer Institute) with working desks, ranges, a foodmixer, a dishwasher, refrigerators, and a laundry with a washing machine. Two young alumnae (one the executive secretary of the Institute of Euthenics, the other research assistant) live in an apartment in the building and afford an example of the possibility of fitting a complete housekeeping

[1] Received for publication January 14, 1935.

scheme into a full academic program. The secretary acts as general counselor, and the director of the Institute of Euthenics as consultant, especially on nutrition.

All the business departments of the college coöperate most generously. The general store fills food orders at the price allowed the large residence halls; on requisition the purchasing agent will buy anything needed; and the comptroller, who handles all funds, will issue petty cash whenever there is a head cook in office who prefers to do her own marketing. The college makes no subsidy; full fees are paid for tuition and rooms; the saving of $300 on each student's yearly fees is effected entirely in the domain of meals.

ORGANIZATION

The first organization was worked out with professional help from Gladys Beckett Jones of the Institute and of the Garland School in Boston; it has been progressively developed by the group. The work to be done was divided into fourteen jobs (now thirteen); half the girls are always on duty, two weeks at a time, and half off for that period.

During the year every member of the group was in turn first assistant, then accountant. Orders for food were sent daily to the college purchasing department and returned in about a week, carrying prices paid for each item. The following week-end, specific quantities and costs were recorded by the accountants in a trial balance book under "Milk," "Eggs," and so on; totals were recorded in a journal book.

Detailed records of amount and cost of food purchased also make it possible to know, at any time, the nutritive balance in terms of protective foods or even of nutrients, and obviate fear of exceeding the food cost allowance. Food waste, though varying, has been most of the time very small. Pantry waste is lessened by daily ordering and by ingeniously using the small amounts left over; plate waste is kept low by table service.

Table 1 shows cost distribution among the chief foods during six approximately equal periods throughout the year, with daily per capita and total cost of food in each period. A rather surprising evenness of distribution is shown, considering that the crew changed every week (Friday afternoon, in order to allow them to begin during the week-end when there were no classes) and that menus were planned with no special effort to use a definite amount of each sort of food, but chiefly to satisfy preferences of the individuals and the group.

Protective foods—milk products, eggs, fruits and vegetables—are represented by 59 per cent of the total expense of food (milk products by 26.5 per cent, fruits and vegetables by 28.7 per cent); 9.6 per cent

of the calories from fruits and vegetables were provided by dried fruits, apricots, prunes, raisins and dates, and 0.4 per cent of these calories from dried lima beans. Canned fruits were used to some extent, but these may now be regarded as protective. Meat costs were less than 20 per cent of the total, and cereal products less than 9 per cent. Total costs might be lowered by increasing the amount of cereal foods used, at the

TABLE 1

Seasonal food cost distribution

	SEPT. 21–OCT. 26	OCT. 27–NOV. 30*	DEC. 4–† JAN. 25	JAN. 26–MAR. 2	MAR. 3–‡ APRIL 12	APRIL 13–MAY 18	MAY 19–JUNE 12
Fruits and vegetables	101.28	120.47	131.72	112.34	115.93	146.42	108.69
Milk, cheese, eggs	101.18	99.39	112.09	97.08	106.01	108.13	77.81
Fats	39.66	44.97	42.30	30.05	35.82	40.80	27.53
Meat and fish	72.37	94.74	92.29	86.91	75.47	89.10	59.43
Cereal products and sugars	71.47	53.94	67.74	48.93	50.45	57.50	31.19
Miscellaneous foods	38.21	36.38	21.27	17.85	18.44	13.89	12.63
Total cost	$424.17	$449.89	$467.41	$393.16	$402.12	$455.84	$317.28
Daily per capita cost§	43.2¢	45.8¢	43.3¢	40.1¢	41.0¢	46.5¢	46.2¢
Length of period	5 wks.	5 wks.	5½ wks.	5 wks.	5 wks.	5 wks.	3½ wks.

* Group away for Thanksgiving vacation, 4 days.

† Group away for Christmas vacation, 18 days.

‡ Group away for Easter vacation, 10 days.

§ 43.7¢ average.

TABLE 2

Food cost distribution

	TOTAL YEARLY COST OF FOOD	PERCENTAGE OF TOTAL FOOD COST
Fruit and vegetables	$836.85	28.7
Milk, cheese	591.11	20.3
Butter	180.40	6.2
Other fats	80.73	2.7
Eggs	110.58	3.8
Meats, fish	570.31	19.5
Cereal products	256.08	8.8
Sugars, syrups	125.14	4.3
Miscellaneous	158.67	5.7
	$2,909.87	100.0

expense of fruits. Forty-three cents per capita per day is not low, and the group considered lowering it, but the choice had to be made between spending less money but more time in preparing meals, or spending more money for foods that could be served with little preparation. The purchase of animal foods accounted for 49.8 per cent of the total money expended.

A similar study (1) of food in a university dormitory in California reported that fruits and vegetables cost relatively less (22.8 per cent and 25.6 per cent in two periods); milk less (15.6 per cent and 18.25 per cent); meat, cheese and eggs more (27 to 36 per cent); fat and cereals about the same proportionately. The total food cost was 39 cents and 36 cents in the two periods.

A nutritive analysis of the food purchased was made by the short method of Hawley (2), supplemented for analysis of vitamins A and C by values in Sherman's *Chemistry of Food and Nutrition.* The results are summarized in Table 3.

Since the average height of the group was 65.4 inches, and the average weight 124.4 pounds (56.6 kilograms), protein furnished was more than 1 gram per kilogram of body weight. Vitamin A was 100 per cent in excess of the tentative standard cited by Stiebeling and Ward (3), while

TABLE 3

Nutritive analysis of food bought

	TOTAL FOR YEAR	TOTAL PER PERSON PER DAY
Protein	466,698 grams	70.0 grams
Calcium	6,173 grams	0.92 grams
Phosphorus	8,828 grams	1.32 grams
Iron	79.2 grams	0.0118 grams
Vitamin A	44,096,647 units	6616 units
Vitamin C	1,513,623 units	227 units
Energy	15,978,669 calories	2397 calories

vitamin C was about 15 times the requirement they cite. Only iron is low. The energy value of the food might seem low except for the fact that most members of the group gained weight.

SUMMARY AND CONCLUSIONS

The food chosen by 28 undergraduate college women doing coöperative housekeeping with no maid service was influenced necessarily by the ability and free time available in the full academic schedule of the cooks, and the fact that the crew changed every week. Excellent current recording made the experience of each one available to the rest.

Daily per capita food cost varied between 41 and 46 cents in weekly periods from October to June, and averaged 43 cents for the year. Percentages of food money used for milk products, fruits and vegetables, and meats and fish, were, respectively, 26.5, 28.7, and 19.5. Fifty-nine per cent of the total money spent for food bought milk products, fruits, vegetables and eggs.

A nutritive analysis showed the yearly composition of food per capita, daily, to be protein, 70 gms.; calcium, 0.92 gms.; phosphorus, 1.32 gms.;

TABLE 4

Energy distribution

	CALORIES
Milk, cheese, cream	2,586,000
Butter	2,121,000
Eggs	298,880
Fruits and vegetables, fresh and canned	2,242,600
Dried apricots, prunes, raisins, dates, lima beans	251,800
Olives	21,600
	7,521,880
Cereal products, meats, oil, sugar, etc.	8,456,789

TABLE 5

Amounts of various foods used

	TOTAL FOR YEAR FOR GROUP	TOTAL PER PERSON PER DAY
Milk	3342 qts.	0.5 qt.
Butter	606 lb.	1.44 oz.
Eggs	311 doz.	0.55 egg
Meat*	1973 lb.	0.29 lb.*
Fish	285 lb.	0.04 lb.
Grapefruit and lemons, E.P.	172 lb.	0.4 oz.
Oranges, E.P.	3151 lb.	7.5 oz.
Apples	1504 lb.	0.22 lb.
Tomatoes, fresh and canned	953 lb.	0.14 lb.

* One-half in meat with no waste.

TABLE 6

Fruits and vegetables chosen

Fruit, fresh, total		5254 lbs.
Oranges	3151 lb.	
Grapefruit	121	
Lemons	50	
Apples	1504	
Bananas	127	
Others	301	
Fruit, canned, total		830
Fruit, Dried, total		208
Vegetables, fresh, total		3955
Stem, leaf, flower	1540	
Root, bulb, tuber	1603	
Green legumes (including string beans)	376	
Tomatoes, raw	436	
Vegetables, canned, total		636
Tomatoes	333	
Peas	148	
Others	155	
Vegetables, dried, Lima beans		7
Canned soup		293
Tomato	185	
Other	108	

iron, 11.8 mgms. (because of little meat and legumes); vitamin A, 6616 units; vitamin C, 227 units; energy, 2397 calories (on which 25 of the 28

gained weight). Half of the energy value of the food was in "protective foods"—milk products, fruits, vegetables and eggs. For each member of the group there was bought daily for the entire period (on an average) one-half egg, 1 pint of milk, 1.44 ounces of butter, 5 1/4 ounces of meat and fish and more than 7 ounces of (edible) orange. Waste was kept low by daily ordering of perishables and by individual table service.

Health records as well as academic records were excellent.

This group of young women, entirely free in their choice of food, ate relatively little meat, a moderate amount of milk, very little cereal food, much fruit, especially oranges at breakfast and apples in the evening.

REFERENCES

(1) GODDARD, V. R., *et al.*: Food economy in a university dormitory managed at moderate cost, J. Am. Dietet. A. 9: 353–60, Jan., 1934

(2) HAWLEY, E.: Tech. Bull. no. 105, U. S. Dept. Agric. Jan., 1929

(3) STIEBELING, H. K., AND WARD, M. M.: Dept. Agric. Circ. no. 296, Nov., 1933

ADMINISTRATORS WANTED[1]

LORENA RICHARDSON

Simpson's Arcadian Court, Toronto

THE familiar story is told of a young lieutenant who was recommended to Napoleon for promotion because he had shown exceptional courage and bravery in battle a fewdays previously. When the recommendation was made to the general, he is said to have expressed himself to this effect: "Great, but what did he do the next day?" In this stirring note of challenge, there is very little compliment for the past achievement, very little encouragement for the lieutenant to rest on his laurels.

Graduates are leaving home economics, household science and food courses today, invading in large numbers schools and colleges as teachers, hospitals as student dietitians, and commercial institutions as food supervisors. In any one of these three fields there is a tremendous need for the best type of administrator, one who is looking for greater tasks, one who will progress and not feel that she has arrived because she has acquired a little knowledge in her preliminary training.

It is in the commercial field, where work has formerly been carried on largely by men, that I have had most experience. During the last few years there has been a definite trend toward employing trained women, and now there is a demand for more administrative women. It is of singular significance that although there is much competition among women in the securing of positions of any kind, particularly among those who are in junior positions, yet there is practically no competition for senior administrative positions.

From conversations with those engaged in work closely allied with mine, and as a representative of a highly departmentalized organization, I assume that there is an extreme dearth of those who are willing to, or even capable of, accepting responsibility. This is chiefly because there are too few who have visual or perspective knowledge, too many who have neither definite aim nor goal. They tell you quite assuredly that they want to arrive, but they want to arrive before they start. They have a notion that their academic training has been so all-sufficient and complete that they should not have to go through the further necessary steps of hard, practical work. They lack vision to see what is required of them as working executives. They do not realize that progress does

[1] Read before the American Dietetic Association, October 16, 1934.

not necessarily mean arrival; it always means more work. There are many who let themselves down the day after graduation. Seldom does one victory make a woman famous. She has to keep on living up to her reputation. The dietitian should not feel that she has achieved her goal the day she completes her studies or her student dietetic work.

Discharging responsibilities requires the making of decisions; to decide is painful, since this requires thinking which is associated with a fear of the consequences of making a wrong decision. The result of such fears is that many people refuse to make decisions, preferring to let the matter drift until it decides itself; thus problems accumulate to block action and obstruct progress. Such procrastinators are poor executives because their own indecision hinders those under them. A good executive makes decisions as quickly as possible and thus keeps the machinery running.

People who do not accept responsibility because it entails decisions, invariably lack the courage to take the consequences of their own decisions. Courage is born of a self-confidence that trusts its own judgement. A courageous person is willing to use his best judgment at any given moment on any problem that arises. The good executive does this in the knowledge that although he may make some mistakes by making decisions promptly, he will more frequently be right than wrong, and at least he will be keeping things moving forward. The best executive, therefore, is the person who can make the maximum number of decisions in the minimum time, with the minimum of errors.

This kind of confidence in one's own ability to make decisions grows by practice. The more decisions made, the more rapidly they may be made because courage grows with success and confidence in judgment increases. The more rapidly the executive makes decision, the quicker the work flows in his own department, and, seeing its progress, he has less fear of assuming responsibility. He is therefore ready to assume more and larger responsibility with the result that he automatically promotes himself to a higher position.

The problem is how to develop this sense of responsibility in juniors, who must be depended upon for the carrying out of instructions. If the executive always gives a practical demonstration of her courage to make decisions, her self-confidence will inspire her subordinates. A further way to develop responsibility is always to require it; if anyone fails to discharge responsibility she should be questioned immediately, "Why did you fail to do your duty?" Such a check-up would serve as a compulsion to a hesitant person.

First intuitions and first thoughts, in most situations, will more usually be right than second ones. There is a psychological reason for this; second thoughts become mingled with fears and indecisions which always tend toward a conservative rather than an adventurous action. The person with an expansive ideal requires courageous and adventurous decisions rather than a falling back on safe courses.

In the final analysis, assumption of responsibility demands character. The person of sound moral integrity has a buoyant sense of self-confidence and security. Conversely, lack of personal integrity undermines self-confidence.

One of the essential requisites for any person who is to work constantly with food, is to have a good food sense. She must know when a food is most nearly perfect, when it is properly seasoned, artistically served, really hot or really cold. It seems amazing that people can be in food work and not have this primary knowledge. Ideals are held before them in their schools, but they fail to keep an expansive, ever growing ideal.

Recently I enjoyed reading an article in this JOURNAL on a code for student dietitians. I marked certain phrases and to these I should like to add the following: (1) accuracy to the decimal point; (2) a good memory on a pad and in your brain; (3) ability to be one's own self-starter and to maintain one's own interest and enthusiasm even through periods of discouragement, since nothing worthwhile was ever accomplished without enthusiasm; and (4) capacity for responsibility, for it is this which enables people to organize themselves decisively until their personality is felt in everything they do.

We need sagacious people who by practical application of high ideals can solve the pressing and practical problems of the day. Those who have an ever-expanding ideal will ultimately be able to carry great responsibility. Many who come seeking high positions do not have these qualifications. The idea of a good food sense never occurs to them; they lose sight entirely of the dictum that "the better the food the less the waste." They carry on aimlessly and indifferently, in the expectation that someone else will attend to certain details. They wonder why they are never considered for promotion.

Shakespeare said, "Security is a mortal's chiefest enemy." Feeling secure in one's present position may prevent the launching of greater undertakings. A classic example of this is the story of the British Navy which lay at anchor in the harbour of Arran, Scotland. A great storm broke outside and the waves began to roll mountain-high into the mouth

of the harbour, threatening to tear the vessels from their moorings and dash them to pieces on the rocky shore. What did the admiral do? Did he order stouter cables? Nothing of the kind. In the teeth of that raging gale, they sailed out of the narrow harbour to the open sea. "There is more security," said the admiral, "on the high seas than there is in a narrow harbour."

It is most natural to suspect that not all who apply for such positions are by nature or qualifications best suited to commercial work. During the last year I have used the chart prepared at the University of Michigan Hospital for use as a rating sheet for pupil dietitians at the end of their service, and have found it invaluable in my search for those who might develop administrative ability. I do not use the rating sheet in the presence of the applicant, but I am familiar with the nature of the questions and interrogate the applicant accordingly. The questions include: "Do you use a mapped-out plan when you work, or do you work haphazardly?" "How do you take criticism; do you resent it, do you crawl into your shell, or do you decisively take hold of yourself and resolutely determine to go out and improve?" "Can you quickly adapt yourself to new situations?" There are other illuminating characteristics: open-mindedness, ambition, imagination, initiative, patience, perseverance, control of emotion, health. Such questions do not constitute an easy interview, but offer opportunity to discern certain important characteristics. Sometimes applicants may resent these questions, but I find them helpful for the employer and the applicant. The interview may purposely be made difficult to see how the applicant responds. Anyone seeking work is primarily seeking a means of livelihood, but I do think it fair to inquire, "Why did you come here?" and "What particular part of this work appeals to you?"

I like to select supervisors with the thought that they will have a capacity for eventually becoming the head of the department. Every good executive owes that to her company. The greatest compliment the head of any organization can pay to an executive is simply this: "The department or the business runs on smoothly in the absence of the manager, or after that executive relinquishes his or her post." If supervisors remain a year or two, the money expended on training and in wages is an item of greater importance than the selection of a one or two thousand dollar piece of machinery. The machinery is expected to deteriorate in value with time; the supervisor should improve and pay greater dividends both to herself and to the company.

It may seem discouraging for academically trained workers to commence at a beginner's wage, but they should remember that they are still in a training school of experience and that they will climb up the ladder, one rung at a time, as they develop their talent and prove worthy of responsibility.

Young people are ambitious, they want to advance, but frequently they lack a sense of responsibility. Some of the initial training in the acquiring of such aptitudes should commence in the secondary schools; later, in college training, students can be assisted in work that will tend to develop their initiative and originality. They should be encouraged to engage in public speaking and anything else that will help them to think quickly and constructively, on their feet. I like to send any of the junior assistants to my superior officers as frequently as possible, just for the experience gained.

On the walls of the Ford Exhibit at the Century of Progress was the sentence, "Industry does not support man, it is man that supports industry." Does that not sum up astutely the thoughts I have tried to express about those who want to advance? They cannot understand that at the beginning their services are not rated so highly as they would like to see them valued, and yet they are not willing to make the sacrifice of developing within themselves initiative, constructive foresight and a sense of responsibility. They take the *laissez faire* attitude—"I am established, the system is already here"—and then they sit down and hope the other person will do the worrying.

There are those who have reached high positions, who have had the qualifications mentioned and were not afraid to venture into the untried places. Today business is sending forth the call, "Administrators wanted." There is always a shortage of workers who can overcome obstacles and handle the big jobs. Carlyle's words are appropriate, "The block of granite which was an obstacle in the pathway of the weak, becomes a stepping stone in the pathway of the strong." Capitalize your difficulties. They are the materials of your future happiness and advancement.

"When any great design thou dost intend,
Think on the means, the manner and the end."

THE DIETITIAN AS AN ADMINISTRATOR[1]

ERWIN H. SCHELL

Head of Department of Business and Engineering Administration, Massachusetts Institute of Technology

OBVIOUSLY it cannot be my place, nor should it be, to deal with the technical aspects of your responsibilities. We have, however, many common problems of administration. Your administrative responsibilities are concerned with a considerable number of subordinates whose interests must be your interest; there is also that larger group whom you serve, whose physical welfare is directly dependent upon your knowledge and skill.

My thesis is a simple one. It is that we cannot expect good administration unless we offer continuity and length of tenure to the administrator. We are cursed in this country as in no other with the managerial adventurer, the administrative voyager who views his job only as a port in a storm and whose history is but a sequence of short-term retainerships that begin and end with disconcerting readjustments and disturbances. It would appear that style-consciousness has unwisely found its way into our body economic as well as our politic; that in our morbid demand for change and variety we are accepting the superficial allurements of novelty and style in place of the deeper values which require longer time for their fruition. There is too high a turnover in American administration. Your profession suffers no less than others. Indeed, it has seemed to me that in some respects you are more prone to feel the effect of this demand for change than are many other callings.

Yet we must admit the presence of a qualification. You cannot ask for long and continuous tenure of service unless you are in a position to provide not only a wise but an acceptable quality of administration. You would not ask that continued service be granted on any basis except the satisfactions of those whom you serve. You do not wish a sheltered occupation, yet no one can build a worthwhile career on shifting sand. Deepest values are not momentary. Greatest returns require time for accomplishment. Administration may not be entitled to continuity of tenure, but it requires such length of service in order to make the greatest contribution.

There is no assurance that such desirable conditions may be attained.

[1] Presented before the American Dietetic Association, October 16, 1934.

My purpose is rather to point out certain of the principles of conduct upon which your continuity of service may be based. In relating these principles to your own activities, I enter a field in which I can speak only as a layman, therefore do not view too critically such examples as will be cited. There are problems of administration which are common to all administrators, but their interpretation and application must be made individually.

One of the fundamental principles of long-term administration is that the administration, to be continuous, must fulfil a need rather than a want. This principle bears upon many problems which are close to your interests. Our economic structure and condition are such that inordinate efforts are being made in all phases of business to attract the custom of the buyer. These efforts proceed past the zones of propriety into areas of exploitation.

Dietitians must face the presence of these influences which are catering to wants rather than needs, and which are causing people to develop attitudes toward food which may be not only erroneous but harmful.

This difficulty cannot be combated directly. We all feel at liberty to make our own mistakes and we shall probably continue for many years to be affected by the skill and eloquence of the professional ad-writer. But if you accept this statement in its superficial form and content yourself with the adage, "Give the people what they want," you will find yourself incapable of continuous service, for culinary administration is never sufficiently flexible to satisfy the buyer whose purchases turn on whim or caprice.

The converse of this problem is the prevalence of orthodox eating habits based upon early training and ideas formulated at a time when our knowledge of diet was much more limited than at present. Whereas the younger age groups may be inclined to lean too heavily toward the quick acceptance of enticing ideas, the older group is much more inclined to rely upon antiquated and obsolete doctrines. To bring the desires of these individuals more closely in accord with their inherent needs and requirements is no mean problem, yet it must be solved if you are to enjoy the greater opportunities for your personal development which come through enduring responsibility.

Your problem is made more difficult since emotional attitudes are closely related to effective nutrition. There is no question but that food which has been made attractive, either through appearance or through the written sales appeal, has greater promise of physical acceptance than nourishment which is unattractive or upon which suspicion

has been cast. Surroundings and appearance directly affect digestion; irrespective of inherent nutritional values, food must have an initial eye appeal if it is to be enjoyed.

In your acceptance of the principle that needs rather than wants should be satisfied, you must appreciate that needs can only be reached through the medium of attractiveness which induces people to want what is best for them. When you meet exploitation, it may best be combated with its own weapon of visual appeal. With those who cling to outworn concepts of nutrition, progress may be made through the appeal of attractiveness and palatability. All of this takes time. Think of the salad, for example. Appearing modestly and unostentatiously on the outer rim of the beefsteak and onions, it has gradually inched its way to prominence.

The thrill of novelty is characteristic in many forms of life, but the tendency to weigh experience is equally prevalent. A horse, cantering across the meadow, exulting in the morning air, will finally stop and look back. Human creatures do likewise. We may become enthralled with a new idea, we may be addicted to an outworn habit, but from time to time we all tend to take stock. Sometimes it requires discomfort to bestir us, but usually this back-look accompanies the waning of our enthusiasm when novelty sinks to the realm of routine. When this time comes, if you have catered truly to the needs of those whom you serve, they will be grateful to you that their physical condition is fundamentally improved, that their experience has not only brought enjoyment but intrinsic gain.

Administration is truly an art as well as a science. Science is bottomless; the hoped for discovery of underlying laws which will make all things clear and simple proves as disappointing as Ponce de Leon's search for the elixir of life. The deeper we pry into the secrets of nature, the more complex is the pattern which appears before our eyes. Something more is needed. Could we concentrate all of our scientific knowledge and skill in a single roadside kitchen, it is probable that our most serious competitor along the highway would be the ubiquitous hot dog stand. This is only to say that plebian artistry, even in its cruder forms, may have greater influence than science when we view dietetic administration in its broadest sense.

It is true that the glass graduate, the thermometer and the heat control mechanism are supplanting the rule of thumb, or forefinger. But we should not feel disturbed if this process of substitution never became quite complete. Let us hope that there will always be a place left for

culinary genius in the dietetic field. After all, we are well over a million years old. Many of our satisfactions are instinctive, the product of centuries of development. To take what little romance is left out of bacon and eggs or roast beef and mashed potatoes would be to leave the world a little poorer than before. A candy shop in Boston used to harbor small grilled openings beneath its show windows from which delightful odors issued. I subsequently discovered that although no candies were made in the basement of this shop, a pot of molasses was kept boiling by means of an electric heater close to the grills. I am satisfied that the candies and ice cream sodas dispensed in this shop were distinctly more digestible because of this. And if I were a nutritional expert, I believe I could prove my point. Nevertheless, this was artistry rather than science. I recall an artist that we once retained in Philadelphia. I am not sure that her name was Ruby but she was, indeed, a jewel. When I asked her where she had learned to cook, she answered, "I never had to learn, it was just a natural gift." Up to that time her services had been quite acceptable, but thereafter they seemed better than ever.

The truth is that there is a visual and olfactory quality, called "effect," that cannot wholly be the product of the white porcelain table top and the laboratory coat. I maintain that instead of decrying this resource, we should develop it. I believe that this can be done without any lessening of our scientific standards or operations. After all, the larger part of dietetic responsibility lies in the meticulous administration of routine. It is in this area that science has its greatest opportunity. Routines can and should be subjected to exactness, precision and close objective control. By so doing, artistry is helped rather than hindered. If those employees who are responsible for this quality of artistry can be freed by mechanisms from routine and stultifying responsibilities, they are in a position to turn a larger portion of their energies to this more intangible but no less valuable aspect of their work. For many centuries the prospect of nourishment has been one of the enjoyments of consciousness. I do not ask that you make our mouths water, but at least you should arouse a slight glitter in our eyes. This, I contend, will be the product of imaginative talent, rather than scientific attainment.

Another administrative responsibility, also beyond the bounds of science, is that of a certain quality or spirit which pervades the personnel under your control and to which your patrons are particularly sensitive. The breaking of bread has always been a ceremony that has inferred a sense of trust, of security, of freedom from immediate trouble or concern. The tradition persists. If there be any one environmental factor which

you should stress, it is the factor of pleasantness with all that the word implies in surroundings, service, appearance and attitude. There have been substitutes. Training classes have produced an adamantine courtesy, a finished smile, a measured attention that makes us pray for the dial-menu as we have rejoiced in a dial telephone. This will not serve. Nor are we happy in a setting which gives us the feeling of a marooned pedestrian on a traffic island. Much less are we comfortable in the midst of arrays of needless cutlery and swooping flourishes in the direction of our water glass. We only want a little peace, a little pleasantness. We do not ask for high intelligence. This summer, during a delightful luncheon at a lakeside hotel in Maine, I asked a waitress in which direction lay the North, and she answered, "Do you mean from here?" This was not disturbing, for she was ingenuous if not informed.

The appearance, the temper, the attitude of personnel are direct results of the quality of administration. Irrespective of external influences, your subordinates will impress your guests favorably or unfavorably as your administration is good or poor. No matter how trying the home environment, how difficult the problems without, your employees will seek refuge and relief in their work if you will but provide the opportunity. I realize that human problems are most complex and difficult. I appreciate that they do not submit to mass attack—that they are individualistic and ever-changing. I know that they will draw upon your resources of intuition as well as intelligence. But if your insight can transform the work of your assistants into something more than a necessitous routine, if you have the knack of harmonizing good nature and efficiency, you will find your efforts directly reflected in the greater satisfactions and enjoyment of your patrons and in a lengthening of your opportunities for continued tenure of service.

But there is a harder task. More than any other, it measures your fitness for administrative continuity. It lies in your zest for advance, your zeal for improvement. From you must emanate a steady enthusiasm for the better. You must reflect the quality of temper which is only at ease when progress is taking place. Here is the severest demand that will be made upon your self-discipline. And if you do not take care, the rhythmic quality of your responsibilities will lull you into an even tempo that shows no upward trend.

Progress demands more than an occasional brilliant idea, something more than superficial novelty or variety whose repetition has been concealed. It demands long hours of work and thought. Your privilege to delegate routine responsibilities is only that you may find time for

this more exacting problem. There is much perspiration in administration. It is mainly to be dedicated to the necessities of constant growth. How easily this principle is stated, and how difficult is it to honor! But when we turn the tables about, we see how inevitably it will measure our security of tenure. When we make our next purchase of radio, of vacuum cleaner, of motor car, we shall not only hope but we shall expect that it will offer greater relative value than our previous model. Indeed, the absence of improvement will fill us with dismay and resentment. This point of view is not confined to any specific group of products. It applies to all products, including services. And the improvement that we anticipate in others, is anticipated in us. Its absence brings more than disappointment, it brings disfavor.

Many of you face a converse problem—namely, the too slow acceptance by your superiors of your constructive proposals. Delay and uncertainty may prevent the approval of your ideas and at times you doubtless wonder if the gain is worth the battle.

There is a simple rule of action here for you. Take as great care in the preparation and service of your ideas as you do with your food. Make your proposals appetizing, palatable and nutritious. Have them ready at "meal time," which ordinarily is shortly after it has become apparent that previous recommendations have proved unusually salutary.

Where should we find the inner resource for these constructive energies and enthusiasms? Chiefly, it should spring from a philosophy which incorporates the conviction that continuing growth is perhaps our greatest basis for continuing happiness. You must believe devoutly in progress, else you will only perform lip-service to it. You will find inspiration in the work of others of like purpose. Associations such as yours do not persist unless they provide value, and I maintain that one of the greatest returns is the stimulus to higher standards which active participation always yields.

This thought leads me to the final principle of administration that I would discuss with you. It is that in administration, as in all forms of human effort, there is an infinity of perfection. There is no end to variety in pattern. Yet each may be in its own way a perfect design. Administration, to approach perfection, must be a fusing of personality and method. As there is no one best personality, there can be no one best way. There can only be your best way, and you will be expected to make the necessary modifications in order that your services may be attuned to the peculiar perfections to which your institution or your organization aspires. There is no standardized form of excellence to be

discovered here or elsewhere, nor any single star to which you may hitch your wagon. But each has the opportunity to move forward in a unique and characteristic way toward one of the many myriads of perfections which lie before you.

Throughout these remarks, I have attempted to distinguish between the dietitian as a manager and the dietitian as an administrator. It is management to cater to the inclinations of your patrons, but it is administration to provide a service of genuine attractiveness which steadily and surely will improve the dietary habits as well as the physical standards of your clientele. It is management to bring scientific knowledge and methods into fullest play, but it is administration to couple these forces with the elements of artistry so that delectability as well as nutrition is assured. It is management to organize, supervise and control personnel with efficiency, but it is administration to add to this quality of effectiveness a spirit of good cheer so essential to proper atmosphere. It is management to plan, schedule and dispatch routine operation and responsibilities to the end that adequate and dependable service results, but it is administration further to incorporate a constructive impetus which assures steady improvement and advance in every function. It is management to maintain the standards approved by your profession, but it is administration to induct into your accomplishment a quality of characteristic proficiency which makes for really brilliant achievement.

Administration is clearly the more difficult; it demands more of self initiative, of creative imagination, and a deeper sense of responsibility. But administration offers the greater satisfaction of real leadership, rather than headship, and the greater opportunities for continued growth which can only come with long tenure of service. I am convinced that we human creatures remain at our best when each day gives us some opportunity to try with all our strength, and to contrive with all our intellect. Administration brings such challenges before you. If you accept them, you will bring further greatness and dignity to your profession.

ENDOGENOUS FACTORS IN THE CONTROL AND ARREST OF DENTAL CARIES[1]

CHARLES L. DRAIN, D.D.S., AND JULIAN D. BOYD, M.D.

Iowa City, Iowa

NEARLY one hundred years ago, modern dentistry began concerted efforts to combat and control dental caries. Since that time, numerous studies have been carried out in an attempt to establish a first line defense against the disease. The theories of the causation of caries which have been generally accepted, until recently, have placed the blame upon effects of a certain group of bacteria. Efforts at prophylaxis have been directed against bacterial growth in the mouth. The futility of such attempts has been demonstrated by the occurrence and progression of caries coincident with and in spite of most vigorous efforts. As a nation we probably have as high a standard of mouth hygiene as can be found in the world, tooth brushes, dentifrices, and mouth-washes being used in abundance; it has been repeated with confidence that "a clean tooth never decays," yet there is little evidence of lessening caries. This would seem to indicate that Miller's chemico-parasitic theory is inadequate.

This theory seemed satisfactory to explain the situation until various workers in nutrition began reporting their observations on the increased incidence of dental caries in animals receiving experimental diets, as compared with their controls receiving a more general diet. Since that time there has been a growing conviction that dental caries is related to diet. This belief has been strengthened by the new knowledge that has been gained during the past twenty years, concerning the need of the body for certain substances, some of them heretofore unrecognized, for normal growth or functioning of the body. The proved relationship of rickets to the deficiency of vitamin D or of bone-forming minerals, and the dependence of scurvy upon diets short in vitamin C, are but two examples of such interdependence of nutrition and health. Students of nutrition have studied the possibilities of the relation of tooth decay to deficiency of diet in certain of the recognized essentials. The Mellanbys, pioneers in the study of rickets and its dependence upon vitamin D (1), have become convinced that insufficient vitamin D is the important factor in producing dental caries. Howe (2), on the other hand, feels that

[1] From the College of Dentistry and Department of Pediatrics, State University of Iowa.

Read before the Massachusetts Dietetic Association and invited guests from the medical and dental professions, November 7, 1934.

vitamin C plays an important part. He has shown that a shortage of this vitamin produces changes in the pulp earlier than demonstrable pathology can be detected elsewhere.

About seven years ago, numerous observations of arrest and control of dental caries were made in our Children's Hospital dental clinic at the University of Iowa. The initial observations were made on a group of children who were receiving therapeutic diets because of a metabolic disturbance. Thus their diets were strictly controlled and the contents well known. It was noted in this group at the time of their first admission to the hospital, that active caries was present, most usually of considerable extent; that after intervals as brief as eight weeks these cavities showed no further evidence of active caries and that the bases became hard instead of soft and permeable as we know active caries to be. This arrest was apparent, practically without exception, in those children who had been under dietary control for three months or longer. A majority of these cases are still being observed and many have open cavities which were recorded on the first examination and in which the caries is still arrested. In addition, in the great majority of these cases no new cavities have developed; the exceptions were seen in children who were not adhering qualitatively to their prescribed diets.

It has been the belief of proponents of the bacterial theory that the lessened intake of sugars and starches in the above group led to a corresponding diminution of bacterial fermentation in the mouth and thus to lessened caries. Their contention is not supported by further studies of the subject. For example, it was found that complete arrest of caries had been produced in children with chronic intestinal indigestion, who were receiving therapeutic diets which contained a minimum of fat, adequate protein, and the remainder of the calories in the form of sugar. In addition, it has been found in bacteriological studies that the incidence of *B. acidophilus* and other acid producing organisms may be as great in the mouths of children with prolonged arrest of caries or no caries at all, as it is in children with extensive and active caries. We have postulated on the basis of these observations that dental caries is dependent on some dietary deficiencies, and that any diet which contains all of the recognized essentials for normal nutrition should be adequate to arrest and control dental caries. Since that time, many normal children have been placed on a supervised dietary which differs in no way from the foods recommended as being desirable for normal childhood nutrition and arrest of caries has resulted. It has been found that, almost invariably, if the child actually eats the foods recommended in the amounts prescribed,

the caries is arrested in from two to three months and no further progress is noted.

We have concentrated our efforts on the improving of the general health of the child, considering the needs of the child as a whole. Therefore the entire diet has received attention and attempts have been made to insure adequacy in all respects as far as dietary knowledge permits. We have repeatedly reported arrested caries in the teeth of children, calling attention to the attendant improvement in the general health (3). We believe that a diet furnishing adequate amounts of all the essentials for optimum bodily health will control dental caries. We are also convinced that irrespective of the tooth tissues, arrest and control of caries can be effected if metabolic faults can be corrected through completion of the diet. Caries will not occur, as long as these proceed in an orderly manner. We have found that, in the majority of children, faulty diet is responsible for the metabolic imbalance.

It is best to have the diet consist chiefly of vegetables, fruits, and the dairy products, in order to insure a sufficient supply of the essentials. Starches and sugars have a valuable place, and should be used, but must not be permitted to displace the more necessary essentials. The following foods are suggested as a daily intake for the average child of 5 to 16 years (for younger children, foods of the same nature would be employed, in appropriately smaller quantities): one quart of milk; at least one egg; one serving of meat, fish, chicken or liver; two vegetables, one-half cup servings of each; one orange, apple or tomato and one additional fruit; one teaspoon of cod liver oil; and six teaspoons of butter. Other foods such as bread, cereal, and potato may be added to satisfy the appetite and maintain weight, but under no circumstances should they replace any of the above.

It should be emphasized that arrest and prevention of decay have required no further measures than the administration of an adequate diet, with no accessory medication, unless cod liver oil is to be so considered. Within recent years, certain manufacturers have placed on the market various concentrates of minerals, vitamins, endocrine products and what not, purporting to arrest and control dental caries if taken in conjunction with an adequate diet. Similar results are obtainable with the adequate diet alone. The use of such adjuncts is not only unnecessary, but it diverts the attention from the fact that healthy teeth are to be the rule rather than the exception if the requirements of nutrition are met.

The rôle of bacteria in the control of caries seems to be secondary. With the intake of the necessary tooth-building essentials, the teeth

become more resistant to the action of bacteria. In areas where decay has been active, a sclerosis occurs which serves to check further bacterial decomposition of the decalcified area, and recalcification of the intact dentinal matrix occurs. With a proper dietary, mouth hygiene seems to have little effect on the resistance of the teeth. Bunting (4) has reported the results of observations made on four large groups of orphanage children: one group received a good diet, and also used a germicidal agent (Hexylresorcinol) in the mouth under standard conditions; a second group received a diet but did not use a germicide; a third used the germicide but did not receive any dietary supervision; and a fourth group was used as a control. The first two groups showed arrest of caries in about equal degrees; the third group findings did not differ essentially from those of the control. These results correlate with those of our own clinic, as we have found that arrest of caries can occur in the presence of most unhygienic mouth conditions and that after arrest has been established acidophilic bacilli can be recovered in large numbers from the mouth in many cases.

We have believed from the beginning of our studies that endogenous factors are responsible primarily for the arrest and control of dental caries, and that preliminary to arrest the tooth structure in some manner is made more resistant to exogenous influences.

The only satisfactory clinical method which we have found for the measuring of the degree of carious activity, is that of probing or exploring the exposed carious surfaces with sharp exploring tines. It is true that the personal equation enters into the use of this method, yet the difference between activity and arrest can be demonstrated easily by any dentist familiar with it. We have cases in which arrested caries can be demonstrated in cavities which have been open and untouched for more than four years. The carious process was adjudged arrested in all of these patients by the clinical method of probing.

We have felt the need for histological proof of arrest of caries not only as further evidence that caries has been arrested, but to study the mechanism by which it occurs. Using the method described by Beust, it has been possible for us to contrast the appearance of the teeth of children on good and on deficient diets. Beust (5) has shown that the tooth of the normal individual will respond to external irritations such as abrasion, thermal shock, or the presence of fillings, by deposition of secondary dentine in the adjacent dentinal tubules, resulting in sclerosis of the region. We have found that a similar reaction rapidly occurs around an open cavity, once the diet has been made complete. This

correlates with the clinical observation of hardening of the tooth under these circumstances and has been used to corroborate the clinical classification of carious activity. In teeth with active caries, noted clinically to be soft and permeable to the exploring tine, no sclerosis is demonstrable. The dentine surrounding the cavity is less dense than that adjacent to it and appears somewhat amorphous. Carious teeth have been removed before and after placing a child on an adequate diet and the differences in the degree of sclerosis in the two specimens is striking. It is apparent that this process is protective and reparative in nature, and is to be considered as an endogenous, physiological response of the tooth of a healthy individual to external irritation.

As our studies progress, we are more firmly convinced that endogenous factors must be considered as basic in the control of dental caries, that adequate diet is the most efficient means at hand and that the entire diet should receive attention. We have done nothing to determine whether caries can be attributed to any single causative factor. It is our belief that the integrity of the tooth is dependent upon the adequacy of the diet in all respects, and that probably the health of the tooth can be impaired through the inadequacy of any one of several essentials. We should treat, not the tooth, but the child, and direct our attention toward the health of the individual as a whole.

REFERENCES

(1) MELLANBY, M.: J. Am. Dent. A. 17: 1456, Aug., 1930
(2) HOWE, P. R.: J. Am. Dent. A. 14: 1864, Oct., 1927
(3) DRAIN, C. L., AND BOYD, J. D.: J. Am. Dent. A. 17: 738, Apr., 1930; J. A. M. A. 90: 1867, June 9, 1928; Am. J. Dis. Child. 38: 721, Oct., 1929
(4) BUNTING, R. W., *et al.*: Am. J. Dis. Child. 40: 536, Sept., 1930
(5) BEUST, T. B.: J. Dent. Research 11: 267 Apr., 1931; J. Dent. Research 11: 619, Aug., 1931

SOME RECENT TRENDS IN VITAMIN RESEARCH[1]

R. ADAMS DUTCHER

Department of Agricultural and Biological Chemistry, The Pennsylvania State College

THE invitation to address your annual meeting came to me in Berlin last July just as I finished a five month scientific pilgrimage to many of the research laboratories of Germany and neighboring countries. I have chosen to discuss a number of different phases of pure and applied research which in my opinion indicate the direction in which vitamin investigations are pointed at the present time.

The past two years have been most productive in several lines of work, particularly with regard to the application of organic chemistry and physics to the solution of fundamental problems of vitamin determination, isolation, purification and configuration. Much excellent work has also been done on the clarification of questions regarding vitamin function and further steps taken to arrive at workable international standards of vitamin unitage.

Commercialization of vitamins has increased at a surprising rate. For the first time in history a vitamin has been synthesized in the laboratory and, in the course of a few months, has reached a stage of commercial production where the manufacturer speaks of its yield in terms of kilograms and pounds instead of grams and ounces.

With improved methods and techniques and with the use of natural and artificial anti-oxidants, vitamin concentrates are being increased in potency and stability. Foods of many types are being fortified and supplemented with vitamins in various forms and by various methods.

The pediatrician, dietitian, food control official and nutrition worker are confronted with new and baffling problems. Questions are raised by laymen as well as scientists regarding the respective merits of natural and artificial proprietary vitamin sources for various purposes and needs. Not until the facts revealed by animal experiments can be more intelligently translated into human values will it be possible to evaluate from a quantitative standpoint much of the excellent work going on at the present time. Sufficient work has been done with the higher animals and also in hospitals and clinics to know that many, if not most of the conclusions drawn from experiments on laboratory animals can be applied in principle and in a qualitative way to human beings and to domesticated live stock. Only occasionally do we find that the higher animals

[1] Presented before the American Dietetic Association, Washington, D. C., October 17, 1934.

deport themselves in a physiological manner which differs fundamentally from that of the lower animals.

The response of the medical profession to the work of those in the field of small animal experimentation, and the extent of the clinical research work projected with the view of clarifying many questions which have awaited translation into terms of human health and welfare, is gratifying.

A similar tendency has manifested itself in the field of domestic animal experimentation and practical feeding. We are beginning to find that the veterinary profession is able to utilize the findings of small animal research in the alleviation of many of the nutritional disturbances in domesticated animals and in wild animals in captivity. Farmers and scientists, who deal with expensive and highly bred live stock, have utilized many of the discoveries which originated in studies with small animals, and have made interesting scientific and practical applications in the live stock field.

The desire for the application of fundamental laboratory discoveries is so great at the present time that an announcement of a new discovery is followed almost immediately by clinical, industrial and field tests along practical lines.

It is equally significant that chemical and biological laboratories can now be found in many industrial manufacturing plants in almost every civilized country of the world. Manufacturers of many foods and of biological products now maintain their own vitamin testing laboratories, and where five years ago there were in this country but two or three commercial consulting laboratories equipped to conduct vitamin testing, there are now several of these laboratories scattered from the Eastern seaboard, through the Middlewest to the Pacific coast.

A few state bureaus of food and feed control have already established their own vitamin testing laboratories and all signs point to the necessity of other states following their example in the not distant future.

These it seems to me are some of the general trends and tendencies which are the direct result of vitamin research of the past few years. We will give a brief résumé of a few of the actual research problems of the past two years which are certain to influence and modify our ideas regarding foods, food values and dietetic practices.

Vitamin A

In 1927, H. von Euler of Stockholm established the fact that pure carotene ($C_{40}H_{56}$) produced, in vitamin A-deficient rats, a type of physi-

ological response which seemed to be identical with that produced when vitamin A concentrates are fed. This work was followed shortly by the researches of T. Moore of England, who not only verified the work of von Euler but proved in a most interesting and conclusive manner that carotene is catabolized in the tissues with the formation of vitamin A. As a result of these and subsequent researches, carotene is now recognized as a precursor of vitamin A and referred to as a "provitamin."

Brilliant researches on the plant pigments by R. Kuhn of Heidelberg and by Paul Karrer of Zurich have done much to clarify our ideas regarding the properties and configuration of the carotenes and of vitamin A.

Kuhn, collaborating with Brockmann at Heidelberg and with A. Scheunert at Leipzig, has concluded that ordinary crystallized carotene often contains three isomeric carotenes (known as α, β and γ carotenes) all of which possess identical qualitative effects on growth, xerophthalmia and the sexual cycle. From a quantitative standpoint, however, β carotene is about twice as potent as the α and γ forms.

It is quite clear that β carotene consists of two β ionone rings united by a series of conjugated double bonds. The isomeric carotenes differ only in the configuration of the terminal structures.

Karrer has established the configuration of vitamin A and all evidence points to the fact that two molecules of vitamin A are formed from one molecule of carotene, while the unsymmetrical α and γ forms yield but one molecule of vitamin A. When I was in Karrer's laboratory last May, he informed me that he was attempting to synthesize vitamin A in the laboratory but that the problem was fraught with many difficulties. He stated that he had been able to add some of the double bonds to the polyene chain but that he had been unable to add the terminal unsaturated groupings, owing to the instability of the chain.

Kuhn states that he is convinced that six provitamins-A are known, the naturally occurring carotenes referred to above and three derivatives of β carotene: β oxy-carotene, β carotene oxide and semi-β-carotenone. To my knowledge the above represent the most recent trends so far as the chemistry of vitamin A and the carotenoid pigments is concerned.

Evidence has accumulated which throws further doubt on the clinical value of vitamin A as a general anti-infective agent. While it is an established fact that membrane tissues show a characteristic breakdown in vitamin A deficiency, it is doubtful if clinical evidence exists to show that tissue recovery, after vitamin A therapy, bears a definite relationship to cessation of clinical infection. From a theoretical standpoint heavily

secreting normal membrane tissues should offer less opportunity for bacterial invasion. Conversely, tissue breakdown followed by lessened mucous secretion should offer a better opportunity for infective organisms to obtain a foothold.

The discovery that carotene contributes to the vitamin A potency of foods has stimulated many other types of research, one of which is the part played by carotene in the vitamin A potency of butter fat. Baumann and Steenbock at the University of Wisconsin are of the opinion that 85 per cent of the total vitamin A potency of butter fat is due to vitamin A, *per se*, while but 15 per cent is due to the pigment carotene. This is in close agreement with the findings of Kon of England who informed me that his data indicate that the amount of vitamin A is approximately seven times that of the carotene ordinarily present in normal, well colored butter fat.

It is a matter of common observation that breeds of dairy cattle can be classified according to their ability to produce yellow butter fat. The Guernsey and the Jersey breeds are renowned for their ability to produce a highly pigmented butter fat, while Holstein, Ayrshire and Shorthorn breeds produce a butter fat which is much less rich in color, in spite of the fact that the various breeds may have been fed identical dairy rations.

It was a natural consequence that breeders of the so-called "pigmented" breeds of dairy cattle should ascribe added nutritional virtues to the carotene-rich milks, just as soon as research laboratories began to emphasize the fact that carotene had the properties of vitamin A.

During the past two years a number of laboratories have attempted to answer the question: "Does one dairy breed possess physiological powers not possessed by another dairy breed so far as vitamin A excretion is concerned?"

Sutton and Krause of Ohio concluded that Holstein butter fat was richer in vitamin A than Guernsey butter fat, in spite of the fact that the latter is richer in carotene. They found that the carotene content of butter fat from the various breeds was in the ascending order: Ayrshire, Holstein, Jersey and Guernsey. While pasture feeding enhanced the color of butter fats of all four breeds, the relative order of color values remained the same.

Hathaway and Davis of Nebraska have studied the same problem, but have used standardized creams as their source of carotene and vitamin A. They concluded that the total vitamin A potency of Holstein cream is somewhat higher than that produced by the Guernsey breed.

Wilbur, Hilton and Hauge of Indiana could detect no significant nutritional differences when butters from Holstein and Guernsey cattle were tested for vitamin A content. Similar results have been reported by Kon and Booth and by Watson, Bishop, Drummond, Gillam and Heilbron of England.

At the Pennsylvania State College, Guerrant, Harris and I have been studying this problem with the coöperation of Bechdel and Shaw of the Department of Dairy Husbandry. In our work we have departed from the procedures described above; instead of feeding butter, butter fat or cream we have used fresh milk, fed at various levels. Our investigation has been under way for two years and the work has been attended by a feeling of uncertainty owing to the pronounced variability among individuals of the same breed. At the present time our results do not seem to show significant breed differences, so far as the total vitamin A potency of Holstein and Guernsey milks is concerned, when data are calculated on the basis of the vitamin A units per gram of butter fat. When data are considered solely from the standpoint of milk potency, there is evidence that the Guernsey milks are appreciably superior.

It is evident that the "poorly pigmented" breeds (such as the Holstein and Ayrshire) possess a very efficient carotene-converting mechanism with the result that they excrete less carotene in the milk and more of the colorless vitamin A. On the other hand, it is probable that the Guernsey and Jersey breeds store more carotene in their tissues and excrete more of this pigment in their milk because of their inability to catabolize large amounts of this pigment. If this is true, Guernsey and Jersey milks should owe a larger proportion of their vitamin A potency to carotene and a smaller proportion to vitamin A, *per se*, than is the case with the Holstein and Ayrshire milks. We hope to find an answer to this question.

We have finally proved to our own satisfaction that carotene is not assimilated satisfactorily by the rat when this pigment is fed in the presence of mineral oil. When butter fat is fed at "threshold levels" as the sole source of vitamin A, animals will live, maintain body weight or grow slowly and show no signs of xerophthalmia. When the same levels of butter fat are fed in the presence of small amounts of mineral oil, the animals die with the usual symptoms of vitamin A deficiency. Similar results are obtained when pure carotene is fed as the source of vitamin A. When non-pigmented cod liver oil is fed in the presence of mineral oil, assimilation of vitamin A seems to be quite satisfactory. When mixtures of carotene and mineral oil are fed at various levels, pigment ex-

cretion in the feces increases as the carotene dosage becomes larger. We have attempted to explain these results on the theory that the unassimilated (hydrocarbon) mineral oil possesses a preferential solubility for the hydrocarbon carotene, while the lipoidal or sterol containing intestinal fluids possess a preferential solubility for the sterol vitamin A, thereby removing vitamin A from the unabsorbed mineral oil.

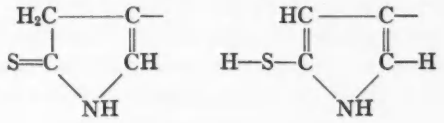
These findings are largely of academic interest. Human beings who use mineral oil as an intestinal lubricant have little reason to be concerned for the reason that mineral oil is usually ingested several hours after the meal has digested and after considerable absorption of nutrients has taken place. It is possible that salad dressings made of mineral oil may prevent some carotene utilization but these, I am informed, are sold to a very limited extent.

Vitamin B (B_1)

An increasingly large literature on the B vitamins has accumulated during the past two years. It seems evident that some of the crystalline preparations of vitamin B (B_1) which have been described by Jansen and Donath, Peters and coworkers, Windaus, and Ohdake are identical substances, although workers are not yet agreed that these crystalline products are completely uncontaminated.

Windaus of Germany, Ohdake of Japan and Van Veen of Batavia have shown that crystalline vitamin B preparations all contain sulfur and this has been confirmed by other workers. Most workers are agreed that the molecule contains twelve carbon atoms and one sulfur atom, but the other atomic constituents have not been established with certainty. The following formulae have been suggested: Windaus, $C_{12}H_{17}ON_3S$; Van Veen, $C_{12}H_{16}O_2N_4S$; Ohdake, $C_{12}H_{20}O_2N_4S$.

Windaus of Gottingen informed me last July that he had good evidence that the sulfur present in the vitamin B molecule is in the form of a sulfopyrrol. He is inclined to believe that the sulfur atom is combined as in (1) but stated that it is possible that formula (2) may be correct.



(1) (2)

While it is dangerous to speculate regarding the relation of configuration and constitution to physiological action, one wonders whether or

not this vitamin may owe some of its properties to the oxidative-reductive properties of the sulfur present.

Peters and coworkers at Oxford have contended that the oxygen uptake of brain tissue of pigeons afflicted with vitamin B deficiency is lower than that of normal brain tissue. Theories are advanced that this vitamin may act as a co-enzyme in an oxidative enzyme system, but the whole problem is affected by so many variables that I merely call attention to its interesting potentialities.

Vitamin G (B_2)

Prior to 1933, little progress had been made relative to the chemistry of vitamin G (B_2). In that year Richard Kuhn and associates of Heidelberg made the interesting announcement that the so-called lyochromes or flavine pigments had been isolated in crystalline form and that these pure crystalline products seemed to possess properties similar to if not identical with vitamin G or B_2. These flavines have been prepared from milk whey (lacto-flavine), liver (hepo-flavine) and eggs (ovoflavine). Kuhn informed me that (after three crystallizations) it was possible to obtain 50 milligrams of ovoflavine from 50 kilograms of dried egg albumin, which represents the albumin from about 17,000 eggs. From 3000 liters of cows' milk he was able to obtain 60 milligrams of lactoflavine.

A chemical study of these flavines indicated that they all have the empirical formula $C_{17}H_{20}N_4O_6$. Absorption spectra of the different flavines were practically identical and mixtures of the crystals from different sources gave no depression of the melting point.

He found that a portion of the molecule, containing hydroxyl groups, could be split off by irradiation. When unirradiated crystals were fed to rats which had been brought to a state of vitamin G deficiency, growth response ensued, providing vitamin B_4 was present. Kuhn and his coworkers have been unable to produce the pellagra-like dermatitis in their rats and consequently no data are available regarding the anti-dermatitis properties of the flavines.

The Heidelberg workers have shown that Warburg's yellow enzyme possesses vitamin G activity and they were able to separate the active component from its colloidal carrier and identified the active component as a flavine. The flavines disintegrate when exposed to ordinary light, with the formation of a chloroform-soluble fragment which has the formula $C_{13}H_{12}N_4O_2$. For this reason it is necessary to protect these

products from ordinary light by using yellow or brown desiccators. Jansen and his colleagues at Amsterdam had a laboratory specially set aside for these products and all windows were painted yellow to absorb the harmful or destructive blue and violet light rays.

A well known English worker informed me that the flavines had been tested in an English laboratory and that it is possible to reproduce the growth responses in rats as described by Kuhn but that the flavines have little or no effect on the prevention or cure of the pellagrous type of dermatitis. This worker also informed me that she questioned the importance of the B_4 arguments of Kuhn, owing to the fact that the Peters fractions used as a source of B_1 in these experiments always carry ample amounts of vitamin B_4.

Kuhn's observations have opened up a number of biological problems in the fields of animal nutrition, cell respiration and the mechanism of enzyme action.

In our laboratory, Guerrant has continued his study of the synthesis of vitamins B and G in the digestive tracts of coprophagous rats. His studies of the past few months have shown that the type of carbohydrate in the diet is a very important factor. When dextrinized starch is the sole carbohydrate, it is possible for the coprophagous rat to synthesize these vitamins. When sucrose is the sole source of carbohydrate, coprophagous rats die with the usual symptoms of B and G avitaminosis. The study is being continued with other carbohydrates to find an explanation for these findings.

VITAMIN C

It would appear that the final chapter has been written relative to the chemistry of vitamin C. It has been synthesized and its commercial production as ascorbic acid is now a matter of record.

The early work of Zilva of England laid the ground work for the isolation and identification of this vitamin when he devised chemical methods for the chemical fractionation of lemon juice. By the use of these methods it was possible to remove the citric acid, sugars and other extraneous materials and obtain a very active antiscorbutic concentrate by precipitation with lead acetate.

As early as 1928, Szent-Gyorgyi of Hungary had called attention to the fact that he had evidence for the existence of a reducing substance (hexuronic acid) in lemon juice, cabbage juice and in various other plant and animal tissues which seemed to be similar to vitamin C so far as

distribution in food materials is concerned. For a time Zilva did not accept the theory that reducing capacity and antiscorbutic properties might be correlated.

In the meantime, King and coworkers at the University of Pittsburgh had succeeded in isolating a crystalline product from lemon juice which showed high antiscorbutic activity and which possessed all of the physical and chemical properties of Szent-Gyorgyi's hexuronic acid.

In 1932, Szent-Gyorgyi (with Svirbely, who had worked previously with King) announced that their crystalline hexuronic acid possessed antiscorbutic properties and that vitamin C and hexuronic acid were undoubtedly identical substances.

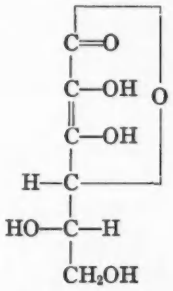
Tillmans of Germany and his colleagues concluded that hexuronic acid and vitamin C are identical and devised in their laboratory a useful titration method (based on the reduction of the dye 2.6 dichlorophenol-indophenol). The Tillmans' method has since been modified by King and coworkers with the result that it is now possible to measure, with a fair degree of accuracy, the vitamin C content of many foods without recourse to tedious and expensive biological assays with guinea pigs. We have used this method with considerable success in our own laboratory in assaying fruit and vegetable juices for vitamin C. Our titration data on these juices and on cow's milk agree remarkably well with biological data obtained simultaneously.

Shaw, Rasmussen, Guerrant, Welch and Bechdel of the Pennsylvania State College have used the titration technique in a study of the vitamin C content of milks from various breeds. While it is too early to draw definite conclusions, it would appear that the vitamin C potencies of milks from the various breeds run in the ascending order: Holstein, Ayrshire, Guernsey, Brown Swiss, Jersey.

Final evidence regarding the identity of vitamin C was afforded by the researches of Haworth and coworkers at Birmingham, Karrer and colleagues at Zurich, von Euler and Martius at Stockholm, and others, that vitamin C (now known as ascorbic acid) is 3-keto-*l*-gulo-furano-lactone with the formula on page 485.

While in Switzerland I learned that ascorbic acid is now being synthesized in commercial quantities in a chemical manufacturing plant in Basle. The method of manufacture is entirely synthetic and depends on the method devised and patented by Reichstein of Zurich: the oxidation of *l*-sorbose. We have made chemical and biological tests of this synthetic ascorbic acid and have found it to be extremely active. Steps

are now being taken to make ascorbic acid the official international standard for vitamin C.



Ascorbic acid

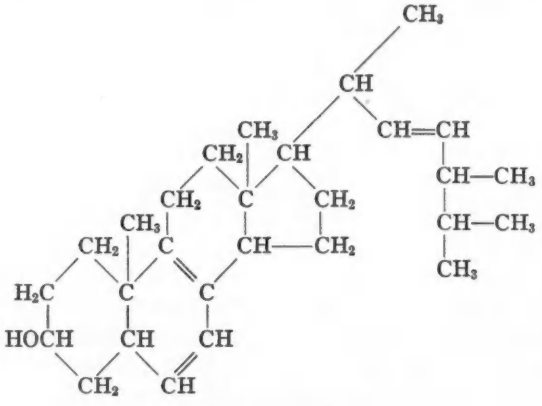
A well-known manufacturer of chemical and biological products in Germany is also manufacturing relatively large quantities of ascorbic acid. I understand that his product is natural ascorbic acid, obtained by the extraction of peppers and similar plant materials. Tillmans and his group have shown that the seed pods of rose plants give excellent yields of ascorbic acid.

Stepp at the Medical Clinic in Munich informed me that clinical experiments were under way at his clinic which offered encouraging evidence that ascorbic acid might be used to advantage in certain diseases which are characterized by skin pigmentation, particularly Addison's disease. Purr of the Cancer Research Laboratories of the Graduate School of Medicine at Philadelphia recently obtained evidence which led to some interesting and important hypotheses with reference to the probable function of vitamin C in the activation of intracellular enzyme systems in normal and pathological tissues. Harris at Cambridge University has made the significant observation that ascorbic acid is found in appreciable quantities in pea seeds just as soon as germination begins, while S. N. Ray from the same laboratory has shown that hen's eggs contain no vitamin C but that this vitamin appears in the chick embryo as early as four days after incubation.

Vitamin D

No outstanding advances relative to the chemistry of vitamin D have been made since the discovery that activated ergosterol can be prepared in crystalline form. Considerable progress has been made with

regard to the determination of the probable structure of ergosterol, but to date we have no clear idea of the structural changes which occur when inactivated ergosterol is changed to the active form by irradiation. The following configuration of ergosterol has recently been advocated by Windaus and coworkers.



Ergosterol

A considerable literature has been published in the past two years relative to the toxicity of ergosterol preparations and the probable physiological effects of over dosage. One of the most comprehensive studies in this field is that of Hauch at the University of Chicago. This writer reared rats of varying ages on a stock diet containing 50,000 times the curative dose of irradiated ergosterol, without observing harmful effects. Young rats were able to live for one year on the stock ration when the dosage was 93,000 times the curative dose. Adult rats, however, were not able to withstand doses of this magnitude. This author concluded that toxicity was less marked when the diet was complete and well balanced.

Evidence continues to accumulate which indicates that vitamin D may exist in two or more forms. Kon and Booth of the National Institute for Research in Dairying at Reading, England, have shown that about 80 per cent of the antirachitic potency of butter fat is lost after saponification, while activated ergosterol and cod liver oil, either alone or mixed with butter, can be subjected to saponification without loss of potency. They find that most of the antirachitic potency is present in the fatty acid or saponifiable fraction when losses, such as those just

described, have occurred. They found that a greater proportion of vitamin D activity remained in the unsaponifiable portion of butter fat when the antirachitic potency of the butter fat was increased by irradiating the butter or by feeding irradiated yeast to the cows.

Rygh of Oslo, Norway, has reported similar observations. He has confirmed not only the findings of Kon and Booth on butter fat but he has conducted similar experiments with ether soluble residues obtained from meadow hays and human and cow's liver. In every case a portion of the antirachitic potency could be found in the fatty acid fraction, indicating that we may be forced to recognize more than one antirachitic factor.

It is common knowledge that the chicken has a vitamin D demand which seems to be many times that of the rat. Bethke and coworkers at the Ohio Experiment Station and others are convinced that many more rat units in the form of ergosterol, than in cod liver oil, must be used to bring about a given physiological response in chickens.

Within the past few months J. Waddell has submitted evidence from which he concludes that cholesterol contains a provitamin which is not ergosterol. By the activation of this provitamin with ultra violet light he has obtained a substance which is as potent for chicks as the vitamin D of cod liver oil. Waddell's work lends additional support to the growing conviction that the antirachitic properties of foods may be due to more than one chemical substance.

R. R. Murphy and Hunter, in my laboratory, coöperating with Knandel of the Department of Poultry Husbandry, have made a very thorough study of the vitamin D requirements of growing chicks and laying hens. Their results indicate that the growing pullet requires a yearly intake of about 25,000 International units of vitamin D when cod liver oil is the sole source of this vitamin.

Clinical evidence is woefully lacking regarding the merits and demerits of the various types of vitamin D milks. I am inclined to take the stand that evidence is lacking, as yet, to show that one form of vitamin D is better utilized than another. Even if such evidence is eventually available, I see no reason why one source of vitamin D should be considered better than another, if a proper standard for each source of vitamin D can be agreed upon by medical and nutritional authorities. This is a matter which deserves the immediate attention of medical and food control officials.

Certainly it is unnecessary and unwise to supplement milk with vitamin D beyond that point where milk will contain sufficient antirachitic

potency to assure the necessary protection of normal children during the winter months. When higher doses of vitamin D are required the matter should be referred to the family physician.

The matter of unitage is a puzzling problem to every one concerned with vitamin D therapy, and much remains to be done to clarify the confused situation that exists at the present time. Table 1, devised by Lachat and Halverson of the Minnesota Division of Feed Control, is most helpful in evaluating the various vitamin D units now in use.

A few years ago a young graduate student remarked to me that since vitamin research had made such rapid progress it seemed to him most of the important problems had been solved and little more remained to

TABLE 1

Vitamin D rat unit equivalents

	INTERNATIONAL UNITS	U.S.P. UNITS	STEENBOCK UNITS	AM. MED. ASSN. UNITS	AM. DRUG MFRS. ASSN. UNITS	ONE D UNITS	OSLO UNITS
One International unit equals	.....	1.00	0.37	0.37	3.25–3.70	0.028	1.67
One U.S.P. unit equals	1.00	.....	0.37	0.37	3.25–3.70	0.028	1.67
One Steenbock unit equals	2.70	2.70	.....	1.00	10.00	0.075	4.50
One Am. Med. Assn. unit equals	2.70	2.70	1.00	.....	10.00	0.075	4.50
One Am. Drug Mfrs. Assn. unit equals	0.27	0.27	0.10	0.10	.....	0.008	0.45
One D unit equals	36.00	36.00	13.33	13.33	133.30	.....	60.00
One Oslo unit equals	0.60	0.60	0.22	0.22	2.22	0.017	.....

be done. Since that time thousands of research papers have been published in various phases of vitamin research; yet every new discovery seems to create many more new problems of even greater importance and significance. No one can prophecy what the next two years of research will bring forth but I am convinced that they will be even more productive and valuable than the past two years have been.

My opinion is that the most outstanding trends during the past two or three years have been in the direction of vitamin isolation, purification, synthesis, the determination of configuration, and the application of improved chemical, physical and biological methods to the clarification of fundamental questions related to the physiological function of vitamins.

EDITORIAL

Romantic Versus Factual Dietetics

This age of social and economic upheaval provides a favorable background for the food faddist. While faddists have appeared in all recorded periods of human history, their underlying philosophy, method of reasoning, and teaching principles continue to show a striking similarity. In common with most proponents of unorthodox teachings, dietary quacks are past masters of the art of sensational propaganda and high pressure salesmanship. Their fallacious promises pleasantly lull lethargic minds, but insult the reasoning of intelligent men and women. Skilled in the magnifying of half-truths, they menace the health of the community. Rehfuss[1] believes that the seriousness of prescribing a similar dietetic régime for all individuals is the first startling demonstration of the danger of such practices. Persons with beginning malignancy, early tuberculosis, diabetes and all sorts of physical ailment stupidly ignore the cause of their condition and seek relief in dietetic frauds while valuable time is lost.

Public libraries have been known to add to this deplorable confusion by listing obsolete books on "health," or books written by ignorant or downright quackish authors. In the correspondence section of the *Journal of the American Medical Association*, September 15, 1934, a medical writer who looked for assistance in one of the public libraries of Springfield, Massachusetts, reports that he was offered Alfred McCann's *The Science of Eating* as a very good book on diets. The writer further states that it is only natural that Mr. McCann should have created such a piece of quackery, but that a city library would list the book and even recommend it to the citizenry was difficult to understand. The visitor to any book sales department, as well, is likely to be induced to buy the currently popular volume of dietary delusions.

Unfortunately, it is not only the layman who is beguiled by dietary sleight of hand. Nurses, medical students, physicians and dietitians have been known to succumb to the lure of magic shortcuts to well-being. As long as we fail to resist the side-show delights of the circus, we shall continue to lap up the honeyed cream of the food faddist. Facts are not pertinent when the pursuit of "systematized ignorance" is pleasantly fostered under the hypnotic sway of men with a string of impressive but usually meaningless degrees after their names. Occasionally the

[1] "Diet and Dietary Faddism," presented before the American Dietetic Association, October 17, 1934.

M.D. degree appears, but seldom has this degree been given the recipient by any reputable medical school. With the persuasive powers of the Indian swami, these teachers of systematized ignorance offer their magic keys to health.

One of the most extraordinary as well as the most popular of present day cults has been the one that claims incompatibility between proteins and carbohydrates in the stomach. We may search in vain through the works of more than two thousand investigators and research workers on nutrition for the name of the great mogul of this school, or for any scientific data that would confirm his theory. This protein-carbohydrate schism is based on the assumption that proteins require an acid medium for their digestion while carbohydrates require an alkaline medium.

According to Rehfuss,[2] "Man is an omnivorous animal. He subsists equally well on the high protein dietary of the arctics, the high carbohydrate regimen of the tropics and the most extraordinary food combinations of the temperate zones." Furthermore, Bauer[3] says "Certain animals—dogs, cats and cows—have no starch-digesting ferment in their saliva, but they thrive on foods rich in starches. All their starch digestion takes place after the food has left the stomach. It is unlikely that nature put these animals at a disadvantage in this respect."

Some years ago Rehfuss and Hawk made a complete survey of the behavior of the normal stomach to every variety of foodstuff. In more than 1000 studies on 200 normal men they were able to show the gastric response on all varieties of food and to correlate these so as to present in a general way the actual digestion of these substances. They found that normal human stomachs were of several types. Some were of a relatively slow type while others were of a rapid type. Furthermore, the secretory responses among the healthy subjects could be divided into groups, showing a tendency to a low secretory output, to a presumed normal, or to a hypersecretory type of response. The most significant feature in this study was the constancy of the type of gastric function. "A fact that has apparently escaped the proponents of the carbohydrate-alkaline theory is that no carbohydrates are ingested which are not followed by a direct acid response on the part of the stomach; in other words, the normal digestion of carbohydrates is attended by the maceration of the carbohydrate in an acid medium before it is available for further digestion in the bowel."

[2] J. A. M. A. 103: 1600–04, Nov. 24, 1934.
[3] J. A. M. A. 104: 1–6, Jan. 5, 1935.

Food faddists have pointed out that while the normal individual can digest practically everything within reason, the same rule does not apply to the chronic invalid. Rehfuss carried out an investigation of the digestion of a number of medical invalids suffering from various chronic diseases. These studies reëmphasized the singular constancy of individual digestion, a point that had been brought out earlier in the studies on normal gastric function. Rehfuss states that:

> There is no evidence either in the literature or in my investigation to lead me to believe that proteins and carbohydrates are incompatible in the stomach. The danger of such teaching based on a lack of scientific evidence is manifest, and while it may be true that many individuals overeat and are presumably better by a reduction of carbohydrates, the unqualified acceptance of such a teaching can lead to the occurrence of serious malnutrition as well as to a lighting of tuberculosis and old infections.

Any benefits derived from diet fads have come because their followers were accustomed to overeat, or eat irregularly, and had used no discretion whatever in their choice of foods. It is possible to believe that this, together with any accompanying rules for systematized living and a will to health, may have something to do with any real or imagined improvement in a devotee's physical well-being. To dietitians it is needless to point out the obvious absurdity of an attempt to unscramble carbohydrates and proteins in ordinary foods. The composition of the majority of our common foods indicates the practical difficulties of such a procedure.

Victims of arthritis have long been receptive listeners to dietary theories. Bauer mentions some of these beliefs. The practicality of omitting so-called acid fruits and vegetables from the arthritic diet seems to be based more on fancy than on fact, since the relatively weak organic acids, such as citric and malic, are readily oxidized in the body. The dangers of a "mixed diet" have also appealed to these rheumatic sufferers. It is the acid-base battle-cry, however, that has been most impressive. Bauer decries the fact that even physicians occasionally prescribe a basic diet in cases of rheumatoid arthritis. He concludes that the "acid system" is a myth. We need make no effort to maintain a basic diet in an arthritic person any more than in a normal one. A well-mixed, adequate diet in no way disturbs the acid-base balance of the body. The low protein diet is a relic of the days when rheumatoid arthritis was confused with gout. Neither is there any evidence to prove that a low carbohydrate diet is indicated in rheumatoid arthritis, nor is there any

proof that it is efficacious in curing the disease. "To evaluate any form of special therapy in patients with rheumatoid arthritis, one must have control study periods for *each patient.*"

Human variables do not permit the wholesale use of a "standard" system of diets or cures. Medical therapy, including dietetic, does not lend itself readily to mass production. There is no single article of food or ordinary combinations of food that can rightly be called dangerous for all people. Each individual requires, more or less, his own food plan, whether in health or when treated for a disease. The quack, on the other hand, may be identified readily by his fine sense of publicity, his dogmatic rules of diet for universal application, and his offer to "treat everything from fallen arches to fallen women with choice dietetic recipes."

Food and Drugs Act Revision

The *Journal of the American Medical Association* for January 12, 1935, carries statements issued by the Council on Pharmacy and Chemistry and the Committee on Foods, and endorsed by the Board of Trustees, relative to revisions of the Food and Drugs Act. An editorial in this same issue points out the changes in modern living since the previous Act of 1905. At that time it was difficult to conceive of the great increases in advertising, particularly the use of the radio and other methods of interesting the public. More and more people are showing an intelligent interest in food and drugs. At the same time, there is a movement toward a suitable declaration on labels of the significant ingredients of preparations. With our advancing knowledge of nutrition have come special foods for the control of nutritional disorders known as deficiency diseases, and the exploitation of food substances as medicaments. Thus another avenue for the dangers of self-prescription is opened. Since specially prepared foods may be needed for definite purposes, their manufacture and promotion should be suitably regulated. The editorial writer says "publishers, as such, owners of radio broadcasting stations and others who are primarily in the business of advertising cannot be primarily responsible for exaggerated or untruthful claims made by the firms which they represent. Responsibility for advertising must rest ultimately with the individual or firm issuing the products."

Among the statements included in a report of the Committee on Foods, concerning the revision of the food and drugs act, are: truthful advertising both by statement and by implication; banning of the use of "names of diseases on the labels and in lay advertising of common foods

but not to exclude names of nutritional disorders arising from inadequacy of the diet in nutritional essentials or of disease names from the labels and in advertising for special purpose foods which are useful in the diet during the course of such diseases"; banning the use of testimonials of a health, medicinal or therapeutic character, by persons unqualified to express a scientific authoritative opinion; the fixing of tolerances for any added or natural poisons in or on food; prevention of use of non-food material, such as shellac in confectionery; banning of embedding of metallic trinkets in confectionery; prohibition of use of artificial colors other than those properly certified; the requiring of informative statements on labels placed conspicuously thereon in simple common terms; and the listing of all ingredients in the order of descending prominence by weight and the special purpose on labels of all "special purpose" foods.

CURRENT COMMENT

Descriptive or Grade Labeling?

Labeling of canned foods seems a very simple thing to those unfamiliar with the technical aspects of the subject and with the laws governing labeling. At first glance it would seem easy to grade canned foods and put the grade on the label for the information of the consumer who buys the product. But the problem is not so easily solved and the present wide interest in the labeling question makes it desirable to set out the issue as simply as possible in order that a better understanding can be reached.

Grade-label advocates have approved as both satisfactory and desirable the so-called A B C system. In this the factors that go to make up quality are assigned arbitrarily a given number of points, the total of which make up a perfect score of 100. A product is then given a rating for each of these factors and in accordance with the total score, say, of 90, 70, or 60 points, the product is graded as A, B, or C, or if other terms are preferred as Fancy, Choice or Standard. These ratings would then be placed on the label to indicate the quality of the contents of the can.

The canning industry on the basis of its practical experience both in manufacturing and in enforcement of the food laws, has advanced as a preferable system a plan for descriptive labeling, under which there would be placed on the label terms descriptive of each of the quality factors that can be definitely or objectively measured or tested. These terms would be such as are familiar to and used by consumers.

The essential difference between the two plans is that under the grade-

labeling system there would be a single designation representing an arbitrary summing up of the qualities of the product, while under the descriptive labeling plan each of the factors which can be definitely measured or tested would be described separately on the label. The question is what is the best and most practical method.

Whatever system of labeling may be adopted, the enforcement of the system will come under the provisions of the Food and Drugs Act which is a criminal statute. This is a very significant fact, because the possibility of securing enforcement of a labeling plan depends largely upon the use of terms that can be precisely defined and the inclusion of only those factors that can be accurately appraised.

Flavor is one of the most important quality factors that enters into the grading of canned foods under the A B C system, and it is a factor that cannot be precisely defined or objectively measured. Agreement as to what constitutes good flavor is impossible to obtain because individuals differ widely in their tastes. There is no such thing as a standardized taste. Moreover, the flavor of foods grown in different parts of the country under different agricultural conditions varies greatly, even if all other quality factors are the same. Accordingly, it is impossible to define flavor so as to make the definition enforceable under the law, and to include flavor in a grade makes the grade likewise unenforceable. To omit flavor from the grade, on the other hand, makes the grade designation meaningless or actually misleading.

Canners want a system that can be enforced and that will not offer opportunity for mislabeling and deceptive practices. The plan they offer is not only simple and informative, but completely enforceable. They propose to put on the label terms that describe each of the quality factors that can be precisely defined or measured, terms so defined that canners can use them properly and food law officials be able to enforce their proper use as well as punish those who misuse them.

For example, a label for canned peas under the descriptive plan might read: early peas, tender, tiny, workmanship excellent, seasoned. The word "tender" would mean that the peas would be such as to a meet a pressure test that has been devised to measure tenderness. Such a test was developed by officials of the Food and Drug Administration for use in enforcement of the McNary-Mapes Amendment of the Food and Drugs Act, and is capable of measuring varying degrees of tenderness. Other descriptive terms used would be based upon tests, where such tests are necessary to give precision to the terms, or upon exact definitions.

As another example, tomatoes might carry a label bearing these terms:

tomatoes, red-ripe, packed whole, unseasoned. In this case, the color described as "red ripe" would have to be such as to meet a color standard expressed in terms of the Munsell system of color notation. Here again is an exact test, with guesswork eliminated, that would make enforcement practicable and certain.

With terms commonly used by consumers thus precisely defined, and with these definitions known and understood alike by canner and food law official, there is provided a labeling plan that is not only genuinely helpful to the consumer, but also completely enforceable by those entrusted with the administration of the pure-food laws.—RUTH ATWATER, National Canners Association, Washington, D. C.

DO WE NEED THIS LAW?

About two years ago an amazing spectacle took place in the city of Baltimore, as amazing as if a group had gotten together to decide whether the moon is made out of green cheese, whether certain old women are witches, or whether dirt can be made into gold by simple means. The scene was a court room. A trial was in progress which lasted three weeks. Preparations for the trial had kept a district attorney's office busy for several weeks, and had occupied almost the entire attention of a government regulatory bureau for six weeks.

Roughly speaking, that spectacle cost the American taxpayer about $250,000 if one counts the expenses of the court, the attorney's office, the government officials and all. Some of the most distinguished medical experts in the United States appeared as witnesses. After such an expenditure of time, energy and money something important should have been discovered, something worthwhile accomplished.

What was proved? Nothing that medicine did not already know. It was simply demonstrated to a judge and jury, by the legal rules of evidence, that a common horse liniment is not an efficacious remedy for tuberculosis of the lungs. Every reputable authority was already aware of this.

After the trial, the manufacturer affixed new and *truthful labels* to bottles of his product, but continued to *advertise* the nostrum as a remedy for tuberculosis. The government was powerless to do anything further, under present laws. If victims of tuberculosis believed the advertising statements and temporized, jeopardizing their very lives by using the nostrum, nothing could be done because the Food and Drugs Act did not forbid such misleading advertising.

At another expensive trial in Pittsburgh, the government proved by a

costly array of expert testimony that an extract of common horsetail weed was not a rational treatment for diabetes, but failed to prove to the court's satisfaction that the maker of the remedy in question was insincere in his protestations of belief in its efficacy. Therefore nothing could be done and he could continue the sale as before, in spite of the fact that all reputable diabetic specialists know insulin to be the only useful adjunct to the dietary treatment of this disease.

In another instance, the government made elephantine efforts to prove that a cheap mixture of pectin, water, fruit acids, and one-half as much pure fruit as is ordinarily contained in good jam or preserves, was not a true jam or preserves and should not masquerade as such. It lost its case because the court rightly held that there was no legal definition of jam or preserves, though manufacturers, wholesalers, retailers, and grocers are generally agreed upon the usual formula for such products.

It would be perfectly possible today to have a food and drugs law that would be broadly protective. Such a law would recognize that it is just as reprehensible to make false claims for products in general advertising as on labels. From the standpoint of consumers and honest producers the injury, indeed, is quite likely to be far greater when the false claims are made on billboards, over the radio, in handbills, or by newspaper and magazine advertising, than when they are confined to product labels.

Cosmetics may be as dangerous to users as bad foods and fake drug nostrums. Remedies for leanness, obesity, bodily defects, freckles, excess hair, and other such conditions not ordinarily classed as diseases, can be quite as dangerous to health (if improperly manufactured) as can remedies for disease. The present law covers only food and drug products. A sound law would recognize the injury that can be done by bad cosmetics and healing devices and would cover these also. It would go further than this. It is possible to make up a list of diseases which reputable physicians believe to be dangerous for laymen to treat by self-medication. Diabetes, cancer, tuberculosis, venereal disease, Bright's disease, and most female complaints, so-called, would undoubtedly be included in such a list. There is no valid scientific reason why any drug remedies or healing devices should be advertised or sold to laymen for the self-medication of these conditions.

In the matter of foods the paramount necessity is to protect the public health. Suppose, however, that a food contains a natural poison dangerous to health. The government can do nothing about that under the present law which prohibits only the use of added poisonous ingredients

which may make the food, as ordinarily consumed, deleterious to health. A sound law would authorize the setting up of tolerances for poisons in food, or their complete prohibition if necessary. These would be based on the opinion of toxicologists and would have the force and effect of law.

Now, in order to protect the public health, the government must go into court with a specific charge, involving a specific lot of food. It must bring expert testimony to show the jury that the food might result in harm to health because of the added poison. Even if it is successful this case stands alone. A new case must be judged on its own merits in spite of the fact that a consensus of opinion of leading poison experts might be ascertained once and for all time to settle such problems.

Suppose, today, that the government had good reason to think that a food manufacturer is so careless in certain processes as to expose his product to contamination with such deadly germs as those of botulinus. It can do nothing here directly to protect the public health. Its inspectors have no legal right to enter factories, and even if they did they could not seize the food. They must wait until it is shipped in interstate commerce, for only then can it be seized legally. Yet the protection of the public health is paramount and a good law would provide power for the inspector to enter factories; it would also authorize the government to seize such suspected food and even to operate the plant under a license, if necessary, in order to protect the public health.

The observance of reasonable standards of cleanliness in the manufacture and handling of all food products would be demanded. The use of poisonous containers would be prohibited. The use in foods of uncertified and impure coal-tar colors would be prohibited. There would be no bringing of separate cases to prove that a specific color used in a specific food made it deleterious to health. Harmless coloring agents would be investigated and certified for all time, and no others could be used. It would be illegal to place metallic trinkets and prizes in candy because these can so easily injury the teeth or even choke young children.

Such a sound law would simply make the prohibition of fraud and the protection of the public health paramount, using the facts known to science in the process. It would forbid the use of slack-filled or deceptive containers, as these are obvious frauds. It would provide for the promulgation of standards of identity and quality for foods. There is no reason on earth why preserves, tomato paste, ice cream and other food products should not be defined and why these definitions should not have the force and effect of law. There is no reason why canned

and other foods should not be graded for quality for the benefit of consumers as they are right now for that of growers, canners and wholesalers.

Because of possible allergic reactions, there is reason for the full disclosure of the ingredients of complex and complicated foods upon their labels, in order to protect the public health. The consumer should also have complete label information about special dietary foods. All products should be informatively labeled, full and honest directions being given, with proper warnings in case of necessity. Mere palliatives or pain killers should never be labeled in such a manner as to make lay users think them cures or proper scientific treatments for basic diseases when they serve only to mask superficial symptoms. Certain drugs deteriorate with age. Their sale should be controlled by the dating of the drugs when packaged and bottled.

A good food, drug and cosmetic law would provide legal authority for the inspection of factories and for the operation of them by a licensing system when the public health could not otherwise be protected. A better law still would license no manufacturer to make and advertise any food, drug, or cosmetic product until it had first passed the rigid tests of a board of experts.

Several bills to accomplish revised food and drug legislation were presented in the last Congress. One of these, S. 2800, in its original form embodied practically all of the essential provisions that have just been mentioned. During the session of Congress, the bill was somewhat weakened but even in its final form it provided consumers and honest business considerably better protection than the present law. It was rejected by Congress; in fact, it never even came to a vote.

Those in charge of enforcing the old Food and Drug Act have been seeking to revise the law so that it will make the protection of the public health, of honest business and the consumer pocketbook, paramount. The only way to control harmful, misbranded, adulterated and fraudulently recommended products effectively, is to make use of certain broad basic principles founded squarely upon scientific facts. We have such information to guide us. What we need is a food, drug, cosmetic and advertising act that will make practical use of this knowledge for public good. Do we want such a law or do we not?—T. SWANN HARDING, 3236 Walbridge Pl., N. W., Washington, D. C.

Our Ever Present Problem—Dish Breakage[1]

To many of us dish breakage has been one of the less interesting administrative problems. We avoid analyzing it, and place the whole subject in the back of our files, hoping that some day we may reduce the rate of dish destruction.

In a study of dish breakage at a large university hospital, out of a yearly supply of 22, 674, there was a breakage of 21,600, or 95 per cent of the total. Such a percentage of breakage is a serious commentary on the situation and calls for all possible efforts to obviate such losses.

The number of broken dishes is a minor problem compared with the number of chipped dishes. The breaking occurs chiefly on the floors, and in cafeteria or dining rooms. The number broken in the dish room is very small, although it is here that most of the chipping occurs. This is done chiefly during rapid and careless stacking and racking. Three times at every meal there is the possibility of the edge of each dish coming in sharp and diasterous contact with another, if work is done carelessly or too rapidly. Other factors that contribute to the extent of breakage are types and qualities of dishes and inadequate storage space.

The durability of chinaware depends upon the quality of raw materials used and the temperature at which these materials are fired, the highest temperature (not exceeding 2600°) producing most satisfactory surfaces. Hence American vitrified chinaware, hard and non-porous, is best for general institutional use.

As to shape, a cup should be chosen which does not flare to a dangerous height above the saucer; the handle should be constructed as an integral part of the whole. The glass should be of a shape which prohibits stacking, such as a barrel shape. Pitchers should be of sturdy lines and not readily upset; a broad base is therefore desirable. Small dishes should not be so light in weight that they slip through the fingers easily. There is a special dish washing rack on the market for cups, so constructed that cups fit into it and are separated, thus reducing one breakage hazard.

Care should be taken to keep floors free from grease or other risks to a secure footing. Doors are a frequent cause of dish casualties and should be well placed and carefully manipulated by the dish carrier.

Dish washers and bus boys should be selected with discretion. They should then be encouraged not to work faster than is consistent with

[1] Based on papers submitted by Evelyn Anderson, Passavant Memorial Hospital, Chicago, and Martha Gillies, University Hospital, Ann Arbor.

efficiency, and those who are careful should be commended on their handling of dishes. By painstaking selection of both dishes and employees, coöperation on the latter's part, and good training by the administrator, the percentage of broken dishes can be greatly reduced.

How to Interest College Students in Nutrition

Colleges have taken much for granted today with regard to the extent of nutritional knowledge that students possess and use. In some instances the matter of nutrition for college students has been considered solved when a dietitian was employed for the dining hall or cafeteria. The result of this neglect is that students may leave college with their physical health unimproved or impaired, and in most cases unaware of the relation of nutrition to their health, efficiency and happiness. They may also be wholly incapable of using nutritional findings in forming better practices for the future. The study of nutrition should be provided for all students as a part of our total educational plan.

Someone has said of the old adage "One man can lead a horse to the water but twenty cannot make him drink" that we need only feed the horse salt to make him thirst. The salt that we need to feed college students today to interest them in nutrition is a convincing demonstration of the rewards of good food practices. Dull and uninteresting methods of teaching do not convince students inured to the more appealing blandishments of the advertisements and broadcasts of today. Let the graphic methods of today suggest to us a way of presenting a good nutritional background to students. Let class experiments be the diet problems of the students, and let practice go along with knowledge. To make this subject vital in the lives of students is a challenging task for nutritionists.

Our goal should be a generation of students practicing good nutrition, using the knowledge of nutrition as a tool for protecting the pocketbook as well as the health, discriminating between the true and the false, and alert to the advances in nutrition that will mean progress in the achieving of a full, richer life and more abundant health.—Blanche Tansil, Associate Professor of Home Economics, Alabama College.

The Student and Food Preparation

The student should be trained in food preparation in order that she may do her job more efficiently:

1. *In emergencies.* The cook in a small hospital was unable to reach the hospital one morning, because of a snowstorm that paralyzed all

traffic. The breakfast, however, had to be prepared without delay. The dietitian in charge promptly stepped in and prepared it herself. If she had not known, through her training, how to make coffee, cereal and eggs in quantity and speedily, the breakfast would have been delayed long enough to disrupt the day's schedule.

2. *As an aid in menu planning.* Familiarity with the kitchen equipment necessary for the preparing of the meals ordered is of great importance. For instance, if a steamed pudding is ordered at the same time as brown bread, and the same equipment is necessary for making each, the baker will complain justifiably that he is unable to fill the order. The student who has learned by experience in the bakeshop will be able to avoid such a conflict and innumerable similar situations. The time element must also be considered. A chef should not be given an order that he cannot prepare conveniently in time for service. If the student knows how long it will take to prepare the various items, she is better able to coöperate with the chef.

3. *As an aid in purchasing.* If the student knows good methods for the preparing of tough cuts of meat and can use those cuts instead of the more expensive ones, if she knows various ways for preparing the cheaper vegetables, if she has accurate knowledge of food shrinkage in cooking—all these things will help her to keep down expenses and purchase to better advantage.

4. *As an aid in reducing waste.* With a good knowledge of cooking, the dietitian can see, in advance, discrepancies between the chef's orders and his actual needs. She can then cut down on the foods allowed him and thus reduce leftovers. In the event that leftovers are unavoidable, she can suggest methods for their utilization.

5. *As an aid in judging the quality of the food prepared.* Development of the taste goes hand in hand with training in food preparation. The student who has had this training will be better fitted to judge the quality of the food prepared by her kitchen staff.—Bernice Levin Simmons, Beth Israel Hospital, Boston.

BOOK REVIEWS

The Vitamin B Requirement of Man. By George R. Cowgill. New Haven: Yale University Press, 1934, pp. 255. Price $4.00.

In the short introductory chapters Dr. Cowgill discusses the incidence of beriberi, describes the disease and summarizes the various theories that have been advanced to explain its cause. He then gives an excellent critical review of the various methods that have been used to study the vitamin B_1 requirement of experimental animals and the comparative value of foods as sources of this food factor. The author presents in detail his own method of investigation and devotes about one-fourth of the book to a summarization of his quantitative studies of the vitamin B_1 requirement of the pigeon, dog, mouse and rat. A mass of data from studies conducted on these four species of animal is presented in support of his claim that the vitamin B_1 requirement of an animal per unit of weight is proportional to the rate of metabolism of the animal in question.

The mathematical formula that expresses this concept as applied to human needs is $\frac{\text{Vit.}}{\text{Cal.}} = .0000284$ Wt., where Vit. represents milli-equivalents of vitamin B_1 per day, Cal. refers to total caloric needs per day, and Wt. is body weight in grams.

One chapter in the book contains a tabulation of the milli-equivalents of vitamin B_1 present in average helpings of many common foods. Dr. Cowgill includes a table by which milli-equivalents may be converted into International Units or other units of measurement that are found today in the literature concerning this vitamin.

The author then devotes about half of the book to the application of his theory to the analysis of data available from published dietary studies made in various parts of the world. Many such comparisons involve diets known to have produced beriberi, another group represents diets that have been found successful in curing the disease. The last series represents analyses of food intakes of individuals in whom the disease has never been known. Dietitians generally will be much interested in the simplicity of the procedure. Everyone interested in nutrition research will rejoice with Dr. Cowgill in the apparently high degree of correlation between his theory and clinical fact. Not all research gives such encouraging preliminary results.

The book ends with a discussion of other clinical aspects of the disease. The author's concept of the relation between body need for vitamin B_1, body weight and total energy needs, seems to explain the variable susceptibility to the disease found in individuals consuming the same kind of food. Dr. Cowgill also discusses briefly the possible relation of this vitamin to certain other clinical conditions.

The author is careful to state that confirmation of his theory awaits "the result of further coöperative effort and study, particularly by clinical investigators." Some dietitians may be privileged to assist in such investigations in the future.

MARTHA KOEHNE

Treatment by Diet. By Clifford J. Barborka, B.S., M.S., M.D., D.Sc., F.A.C.P. Philadelphia: J. B. Lippincott Co., 1934, pp. 615. Price, $5.00.

Dr. Barborka's book comes in answer to the need for readily usable and systematized data for the prescribing of diets and application of dietary treatment. The author says in his preface that too many "stock diet lists of more or less antiquity" which do not consider the individual patient's needs, have been in use. Much of the available dietary information has been so complex—and prolix—that the patient, and sometimes the physician, is needlessly confused. It is not surprising under the circumstances that the unscientific, the sensational and the faddish has at times submerged the scientific and the factual in nutrition. A well-digested summation of our available nutritional knowledge, such as Dr. Barborka presents, is needed. In addition to this, the methods outlined have stood the test of both hospital and private practise.

The book is divided into three sections. Part I, diet in health, discusses the several

dietary essentials for the protection and maintenance of health. The author follows the wise procedure of building his typical "normal" diets upon a basis of 900 calories of the "protective foods."

Part II, the application of diet therapy, discusses qualitative and quantitative diets and includes illustrations of "comparative servings of foods," suggestions for substitutions, and the changing of the caloric and protein value of the diet.

The remainder, more than 500 of the book's pages, covers diet in disease. Diseases in which diet is of paramount importance are listed; their nature, the object and important factors in the treatment are outlined. This section seems to be unusually complete, even devoting a section to the dietary treatment of sprue, while due recognition is given to our present wider use of the ketogenic diet. A section on dental caries and one on routine hospital diets is included, while the appendix lists useful tables and an extensive bibliography.

M. P. H.

The Anatomy of Dessert. By Edward A. Bunyard. New York: E. P. Dutton and Co., 1934, pp. 207. Price $2.00.

Mr. Bunyard makes a plea for serious consideration of the dessert, for "How often after a dinner ordered with intelligence, prepared with art and served with discretion, do we dwindle to a dessert unworthy of its setting." To him, dessert is a synonym for fruits.

He looks upon the apple as king of all the fruits, and so it is in its multiplicity of flavor, texture and juiciness. To the apricot, "shining in a sweet brightness of golden velvet," we look for a fruit with "translucent and melting flesh." For the young and eupeptic, the author commends the Bigarreau cherry, whose joyous crunch is next best to the apple's unequalled sound. The fig, "sweet sister of the vine" should be eaten when fully ripe, so that the "side splits slightly under the pressure of juice." Dried figs are for the young, for the wise could not offend their palates with so pungent and cloying a sweetmeat. Oranges, with the viscid banana, should bestow their vitamin beneficences in the nursery.

The gooseberry produces its best qualities in the English climate and well it must, if it is to be the fruit *par excellence* for ambulant consumption. All visitors on returning from church at 12:30 on a warm July day should have "the freedom of the bush," for the fruit is at its best when picked and eaten while distinctly warm.

The book is seasoned with gentle digs at American fruits. The concept of the ideal melon will never be realized. The author believes there is a family scandal in melonic history, with a vegetable marrow playing the dastard part. Perhaps this is why some are uncertain whether to treat it as a fruit or as a vegetable—some add sugar, others salt. The *Almanach des Gourmands* believes that it is a fruit for hors d'oeuvre, never for a dessert, in Paris, at least. In the provinces it may be another story. We are reminded that Pope Paul II and Frederick, "the Peaceful" of Germany died from a surfeit of this fruit. The author has never visited America, therefore knows nothing and says less of the delectable watermelons of the South and Middle West and the cantaloups of Colorado.

Dietitians are blamed for ruining the nut as a dessert fruit. Nuts used to come on with the port and were a matter for "elegant trifling." But to those to whom innards are innards, the blending of wine and nuts has the authority and charm of antiquity and serves as a background on which (as with cheese) we can detect the subtler shades of vinous flavor.

The peach and the nectarine maintain a delicate balance of sweet and sour with overtones of rich aroma which give scope to the intelligent palate. It is the apple's duty to be crisp and crunchable; the pear's texture should lend itself to silent consumption. Of the small fruits, raspberries, commended by Venner for "weak and queasie stomachs" are dessert-worthy; but strawberries seem to be the most favored. But why no mention of English strawberries married on a Summer day to Devonshire cream?

The book closes with poetic notes on wine. Wines are vinous symphonies; cocktails have

the appeal of brazen trumpets loudly overblown. The fine arts of decanting, temperature maintaining, and drinking of wines are detailed. Claret is the Beethoven of wines and does not reveal itself fully at first acquaintance. Graves Supérieur, Beaune and St.-Émilion have some of the qualities of the three witches in Macbeth, for these names have labeled many a "hellish brew." There is a "Gothic splendor" to Burgundy. The book is commended for its literary charm and originality.

M. P. H.

The Green Mountain Cook Book. By Aristene Pixley. Brattleboro, Vt.: Stephen Daye Press, 1934, pp. 90. Price $1.00.

This attractive little book from Vermont unblushingly wears a paper band with the legend, "The gods of the valleys are not the gods of the hills." The preface prepares the reader for the coming delectables with an introduction to the true spirit of Vermont, as exemplified in its early history and noted more recently in its famous sons: Calvin Coolidge, John Dewey, John L. Sullivan, Stuart Sherman, Admiral Dewey and Louis Sherry. As the writer says, Vermonters may generally be too reticent to become famous, but one gathers that the sternness and reticence of the native Vermonter breaks down before the well stocked cider cellars, the maple sugar pudding sauces and the baked turkey of Vermont. Appropriately enough, soups eminently suited to the cold winter nights are listed. Directions for preparing salt salmon, the Vermont trout and other delicacies are given. Meats include the famous turkey, chicken pie and boiled dinner of Vermont. Directions for another masterpiece, sour cream biscuit, and a typical Johnny cake are given. The puddings and pies and cakes contain characteristic native ingredients. Cider appears in apple pie, butternuts in cake, and maple sugar in gingerbread. The homemade beverages have an old time sound; some of these are dandelion and rhubarb wine, elderberry, spruce and nettle beer. "Grandfather's nightcap" should quiet even a loquacious Vermonter. The book is dedicated to the "Leading [and lovely] Lady of Vermont," Grace Coolidge.

Food for the Young Child. By Miriam E. Lowenberg. Ames, Iowa: Collegiate Press, Inc., 1934, pp. 142. Price $1.50.

This book was written primarily for nursery school workers who have not been trained in foods and nutrition, and for anxious mothers who would feed their children according to accepted rules. The author believes that that bugbear of mothers, anorexia, is often due to faulty preparation of the children's food.

The chapter on menu planning quite thoroughly discusses the selection of food; requirements; suitable and unsuitable food; foods between meals; children's reactions to texture, flavor and color in foods; what foods are easy to eat; how to introduce new foods; special feeding; and food for children's parties, etc. Chapters on food preparation and meal service follow. The chapter on "Eating," by Lydia Swanson, is sanely prepared. The child should master the spoon and other eating implements before we can expect to do much with regard to polite conversation and table manners. As the child grows independent in eating, gradually omit physical help, then verbal directions, and lastly approval or praise.

The book contains menus for a year's dinners and includes typical breakfasts and suppers. Recipes, in amounts for 6 people (4 adults and 2 children), or for 30 servings (20 children and 10 adults), are included.

Diet Manual, St. Mary's Hospital, 2nd Edition. Compiled by Sister Mary Victor, R.N., B.S. Rochester, Minn.: St. Mary's Hospital, 1935, pp. 191. Price $2.50.

Here is a compilation of diet procedures in use at St. Mary's Hospital and the Mayo Clinic. Part I, "The Optimum Diet," outlines daily dietary requirements for the adult, and tabulates standard portions and standard "house" diets. Part II, "Therapeutic Diets for Adults" concisely details directions for feeding and menu making suitable in a number of conditions. Part III, "Infant and Child Feeding" begins with formulas for infant feeding and includes plans for additions to milk feedings, also recipes. The section on child feeding outlines basic requirements for adequate diets for children, feeding

schedules from 10 months to 15 years, and hospital diet lists for children. The section on therapeutic diets for children contains high caloric, reduction, high vitamin, high iron, anti-constipation, residue-free, colitis, nephritic, ketogenic, diabetic and celiac disease diets. Suggestions for milk, egg, and wheat-free diets are included. Material suitable for the preparing of instruction sheets for patients are listed in Part III. An appendix of useful tabular material is included. Sister Mary Victor, the author, is to be congratulated for maintaining the general excellence and usefulness of her manual.

The Mystery Chef's Own Cook Book. New York: Longmans Green and Co., 1934, pp. 366. Price $3.00.

The dust cover's blurb says that "When a million women write asking for a cook book there must be a reason." Naturally, if you can get it for nothing. The sensational appeal of this book seems too great for the author to live up to, for after all this is just another cook book, and the author cannot rightly claim to have the only magic key that opens the door to the arts of the kitchen.

Throughout the book the point of view of the efficient chef is maintained with the use of master recipes and short cuts readily understood by the experienced cook. The woman who longs for cream and sweetness throughout the meal could profit by the masculine view point and the understanding of men's tastes in eating, which is evident throughout the recipes. The book abounds in potted red cabbage, Yorkshire pudding, hors-d'oeuvres and hearty meat dishes, while chicken á la King is dismissed with almost a single phrase. Many concoctions with a foreign flavor are included. The fact that the author demands butter and a touch of salt in his lemon meringue pie makes us forgive him many of his egocentric radio flourishes.

Dictionary of 1001 Menu Terms. By J. O. Dahl. Stamford, Conn.: published by the author, 1934, pp. 43. Price 50 cents, special prices for quantities.

This addition to Mr. Dahl's useful "Little Gold Business Books" has a laudable aim. From his introduction one gathers he wishes to improve this newcomer in future reprints. May we suggest that greater accuracy might obtain with profit in the future? A "scullion" is a low and contemptible person and need not be confused with "scallion," a small green onion. "Shalot" calls for one "l", not two. "Welch rarebit" is a misspelled misnomer; correctly, it is "Welsh rabbit." "Egg nog" is correct, not "egg nogg." Among the faulty foreign terms appears "flor alpina" instead of "flora alpina."

Scandinavian Recipes. By Mary Margaret Shaw, Alabama College, Montevallo, Ala. 22 mimeographed pages. For sale by the author, price 15 cents.

This carefully prepared collection of recipes should prove of interest to those who like to study the food habits, recipes and food customs of various nationalities. The recipes sound very appetizing indeed.

Publication from the U. S. Department of Agriculture and Bureau of Home Economics.

The *Report of the Chief of the Bureau of Home Economics, 1934* outlines studies that have been made by the Bureau during the fiscal year ending June 30, 1934. Of particular interest to dietitians are the food composition and nutrition studies, with emphasis on vitamin and mineral values. Food utilization studies were particularly valuable during that period.

A mimeographed list of the *Research Projects of the Bureau of Home Economics* is available to those interested. Recent studies that are proving of particular interest include Miscellaneous Publication No. 216, *Meat Dishes at Low Cost*, for sale by the Superintendent of Documents for 5 cents, and a mimeographed sheet on *How to Use Dried Skim Milk.*

How to Feed Children from Infancy Onwards. By Stanley Lief, N.D., D.O., D.C. London: Health for All Publishing Co., 1933, pp. 58. Price 2/–.

Here we learn that all diseases of children as well as those of adult life are "wholly preventable by correct attention to feeding." Such a statement is indicative of the value-

lessness of the remainder of the book. Meat makes children irritable and quarrelsome, and "coarsens them." Vaccination "poisons the blood and interferes with nutrition in its most secret and inward places." Verily, the sign of the quack is sensational overemphasis, and rarely, if ever, do we see a dietary quack who is not opposed to vaccination and vivisection.

Diet Reform Simplified. By Stanley Lief, N.D., D.O., D.C. London: Health for All Publishing Co., 1933, pp. 63. Price 2/–.

And still they come. Here we have more sensational dietary ideas seasoned here and there with faint traces of truth.

Rowland's Diabetic Cook Book. By John Rowland, Waukau, Wisconsin. Published by the author. Pp. 110. Price $2.50.

This is another misleading treatise for diabetics and bears the phrase "Live and be well without insulin." It is plentifully sprinkled with copies of letters purporting to come from federal and state bureaus, including the Bureau of Home Economics, the Food and Drug Administration and state agricultural colleges. These, unfortunately, may lend a note of authenticity to the book's contents. Among other enterprises, the author sells products including soy bean oil, which may be used to start the fire, relieve a cough, lubricate the body, make paints and liniments, treat bed wetting, polish floors, prevent rickets, clean woodwork, pop corn, and inflate the bladder. Such "literature" would be laughable if it were not potentially so dangerous.

Salt, Water and Health. By Frederick Hoelzel, 1818 W. Ogden Ave., Chicago, Ill. Published by the author. Pp. 32. Price 50 cents.

There may be merits in the contents of this booklet, but if we take the author's elaborate vita at its face value, a viewpoint influenced so diversely by the writings of Carrington, Chittenden, H. Fletcher, Bernarr MacFadden and Upton Sinclair could hardly be expected to become other than alarmingly introverted.

CURRENT LITERATURE

American Journal of Digestive Diseases and Nutrition

Vol. 1, December, 1934

* Gastro-intestinal studies. V. Gastric juice in anemias other than pernicious anemia. P. J. Fouts, O. M. Helmer and L. G. Zerfas.—p. 667.

*The influence of mucilaginous substances on the emptying of the stomach. H. Necheles, H. I. Sapoznik, R. Arens and J. Meyer.—p. 684.

Studies on the gastric hunger mechanism. I. A. Manville.—p. 688.

Notes on diagnosis and prognosis in gastric ulcer: a clinical study of five hundred consecutive, operatively demonstrated cases. F. Smithies.—p. 697.

* "Okrin" as an adjuvant in the treatment of peptic ulcer. Observations upon twenty-two patients. A. J. Atkinson.—p. 713.

The bactericidal power of the stomach and some factors which influence it. A. Hanszen.—p. 725.

A convenient method of establishing diet and insulin therapy in diabetes. S. M. Edwina.—p. 728.

* Studies in food allergy—a preliminary report. A. W.. Oelgoetz, P. A. Oelgoetz and J. Wittekind.—p. 730

Vol. 1, January, 1935

* Vitamin "A" as a prophylactic against the common "cold" in groups of school children. E. M. Tress. —p. 795.

GASTRIC JUICE IN ANEMIAS. Examination of the gastric contents of patients having anemias other than pernicious anemia, demonstrates that a majority have decreased gastric secretion.

INFLUENCE OF MUCILAGINOUS SUBSTANCES ON EMPTYING OF STOMACH. The effect of hogs' mucin, okra, olive oil and agar on the motility of and digestion in the stomach was studied on 6 normal subjects, on 6 patients affected with peptic ulcer, and on a dog, carrying both gastric and duodenal cannulas. All of the test substances decreased the emptying time but the okra exerted the greatest effect. Okra does not impair the digestion of meat in the stomach but it does decrease considerably the amount of gastric secretion.

"OKRIN" IN PEPTIC ULCER. Studies indicate that okrin relieves pain in patients with peptic ulcer and apparently produces a remission in a large percentage of individuals. Okrin is pleasant to take, does not deteriorate or putrefy and apparently has a protective action on ulcers.

FOOD ALLERGY. The writers have found that most of the ingested protein is not split into amino acids in the gastrointestinal tract but is absorbed into the blood as acid or alkali metaprotein and other derived proteins. Normally, sufficient pancreatic juice is secreted to combine with all of the food eaten and to provide an excess which passes free into the blood stream, combining with and digesting any food which has been absorbed unmixed with enzymes. It is probable that "hypersensitiveness" to foods is caused by an excess of free food in the blood serum, and that this excess is caused by a low pancreatic threshold. The rational treatment of sensitization to food lies in the reduction of the total food intake.

VITAMIN A AS A PROPHYLACTIC AGAINST COLDS. The common "cold" is the major cause of absences in the Long Beach Schools. In view of the supposed anti-infective property of vitamin A, the school children were given diets supplemented with cod liver oil or haliver oil. Those children who had difficulty in taking these fish oils at home were given one haliver oil capsule every day at school. Attendance reports and parents' reactions, based upon responses to a questionnaire, were used in evaluating results. Because of the difficulty of controlling outside factors, it was impossible to make an unqualified statement but it is believed that the vitamin A tended to increase resistance to the common cold.

American Journal of Diseases of Children

Vol. 48, December, 1934

* Iodine and thyroid hyperplasia: I. The iodine content of human skimmed milk from goitrous and nongoitrous regions. R. G. Turner and M. Z. Weeks.—p. 1209.

* Dental decay as an indicator of a dietary fault. N. P. Larsen, M. R. Jones and G. P. Pritchard.—p. 1228.

Rickets: Control with fifty units (Steenbock) of cod liver oil vitamin D concentrate in milk. D. J. Barnes.—p. 1258.

Vol. 49, January, 1935

The formation of character as observed in the well baby clinic. M. E. Fries, K. Brokaw and V. F. Murray.—p. 28.

Calcium and phosphorus content of the offspring after feeding vitamin D to the mother rat. W. Swanson and L. V. Iob.—p. 43.

Studies of phosphorus of blood. III. The phosphorus partition in whole blood and in serum and the serum calcium and plasma phosphates during healing of late rickets. G. Stearns and E. Warweg.—p. 79.

* Iodine content of American cod liver oil. A. D. Holmes and R. E. Remington.—p. 94.

Infant feeding and nutrition. A decade of progress. S. Friedman.—p. 153.

IODINE CONTENT OF HUMAN SKIMMED MILK. The average iodine content of human skimmed milk may vary from 6 to 23 micrograms per hundred cubic centimeters. The average iodine content is greater throughout the period of lactation in goitrous regions than in nongoitrous regions. This is believed to be due to a compensatory activity on the part of the mother's thyroid gland.

DENTAL DECAY AND DIET. The effect of one-sided diets on human teeth and general health was studied over a period of 4 years. Excessive dental decay was found to be an indicator of a gross dietary fault and was associated with a high infant mortality and morbidity. In countries with warm climates where an acid residue diet high in carbohydrate is prevalent, the exchange of the acid starch for an alkaline starch and the addition of a small amount of vegetables will alter dental structure and general growth as well as affect infant mortality and morbidity.

IODINE CONTENT OF AMERICAN COD LIVER OIL. The iodine content of 20 representative samples of American cod liver oil has been found to range from 3,590 to 14,940 parts per billion parts of cod liver oil, the average being 8,460 plus, or minus 530. The iodine content of daily doses of 10 cc. of these cod liver oils, if completely assimilated, would supply, to a great extent, the requirements of the average human adult.

American Journal of Nursing

Vol. 34, December, 1934

* Endemic pellagra. W. H. Sebrell.—p. 1153.

ENDEMIC PELLAGRA. Pellagra is America's most serious dietary deficiency disease. There were 3,955 deaths from this disease in the United States last year. The essential feature in treatment of pellagra is to correct the diet. Milk is perhaps the most valuable food in the dietary treatment, and yeast is the richest known source of the pellagra-preventive vitamin. To avoid further recurrences of the disease, preventive foods must be eaten at all seasons.

American Journal of Physiology

Vol. 110, December, 1934

Basal metabolism in old age. J. R. Matson and F. A. Hitchcock.—p. 329.

Vol. 110, January, 1935

*Degree of constancy in human basal metabolism. F. Benedict.—p. 521.

CONSTANCY IN BASAL METABOLISM. The metabolism of a man in complete repose was relatively constant from day to day. The ingestion of a fairly carbohydrate-rich meal at noon resulted in a somewhat higher respiratory quotient the next morning but did not alter the oxygen consumption. The insensible perspiration was closely correlated with the basal heat production. An emotional disturbance caused a marked increase in metabolism which did not subside for several days.

American Journal of Medical Sciences

Vol. 188, December, 1934

* On the inheritance of diabetes. III. The blood sugar values of the relatives of diabetics. G. Pincus and P. White.—p. 782.

Vol. 189, January, 1935

* Obesity treatment by diet, thyroid and dinitrophenol. Result on 106 outpatients. L. M. Bayer and H. Gray.—p. 86.

INHERITANCE OF DIABETES MELLITUS. Approximately 14 per cent of a group of relatives of diabetics, given routine blood sugar examinations, and 25 per cent of those given sugar tolerance tests, had abnormally high blood sugar values.

OBESITY TREATMENT. In treating 106 obese patients in a clinic it was found that diet alone will reduce an individual's weight 15

pounds in 3½ months. When dieting failed to give results, either thyroid or dinitrophenol were used effectively. As an adjunct to diet, dinitrophenol is at least as effective as thyroid and, in patients with normal basal metabolism, possibly superior. Dietary control was as necessary to the achieving of results with dinitrophenol as it was with thyroid.

Archives of Internal Medicine

Vol. 54, December, 1934

* Pernicious anemia: results of treatment of the neurologic complications. R. R. Grinker and E. Kandel.—p. 851.

PERNICIOUS ANEMIA. Liver therapy improves the general strength of the patient but is not efficacious in the improving or preventing of the degeneration in the central nervous system associated with pernicious anemia. The amount of liver given should be controlled by the height of the blood count, for quantities of liver, in excess, are wasted. Seventeen actual case studies are presented.

Archives of Pediatrics

Vol. 41, December, 1934

A study of 45 consecutive premature infants fed on frozen mother's milk. A. Stern and D. P. Lieberman.—p. 799.

Vol. 42, January, 1935

Dietetic treatment of neurodermatitis in childhood. E. Schiff.—p. 44.

Hospital Management

Vol. 39, January, 1935

Dietary problems of small hospitals. K. C. Burns. —p. 46.

Journal of Biological Chemistry

Vol. 107, December, 1934

* Inorganic salts in nutrition. X. Electrolytic balance in the serum of rats receiving a diet deficient in inorganic constituents. A. Smith and P. Smith.—p. 681.

* Inorganic salts in nutrition. XI. Changes in composition of the whole animal induced by a diet poor in salts. A. E. Light, P. Smith, A. Smith and W. E. Anderson.—p. 689.

* Fat-soluble vitamins. XLI. The carotene and vitamin A content of colostrum. J. Semb, C. A. Baumann and H. Steenbock.—p. 697.

* Fat-soluble vitamins. XLI. The absorption and storage of vitamin A in the rat. C. A. Baumann, B. M. Riising and H. Steenbock.—p. 705.

Vol. 108, January, 1935

* Enzymatic efficiency in avitaminosis. I. Influence of vitamin B deficiency on tryptic and ereptic digestion. B. Sure, M. C. Kik and K. S. Buchanan.—p. 19.

Enzymatic efficiency in avitaminosis. II. Influence of vitamin B deficiency of pancreatic lipase and esterase. B. Sure, M. C. Kik and K. S. Buchanan.—p. 27.

INORGANIC SALTS IN NUTRITION. This study demonstrated anew the stability of the electrolyte equilibria in the blood. The organism maintains this vital balance with surprisingly little alteration in the face of extremely unfavorable dietary conditions for a relatively long period of time. This is accomplished by the elimination of the various demands incident to growth; increase in body weight ceases, the intake of food is decreased, thereby reducing the metabolic burden on the organism.

BODY CHANGES IN RATS ON DIETS POOR IN SALTS. When the salts in the diet of rats are strictly limited for 90 days, there is a striking loss of fat, little change in total ash, a small increase in protein and a slight loss of calcium, magnesium and phosphorus. Even under unfavorable nutritive conditions, the chemical composition of the body is changed so that the available food material is best used to support the vital equilibria and to maintain intact the essential tissues.

CAROTENE AND VITAMIN A CONTENT OF COLOSTRUM. The carotene and vitamin A content of butter fat prepared from colostrum was found to be from 5 to 15 times that of fat prepared from ordinary milk. The carotene and vitamin A content of the butter fat decreased rapidly during the first week of milk secretion, but thereafter the decrease was relatively slow.

ABSORPTION AND STORAGE OF VITAMIN A. Ninety-five per cent of the total vitamin A in the rat was found stored in the liver. The remainder was located in lung and kidney tissue. Absorption and storage of vitamin A, to a large extent, took place within 6 hours

after the ingestion of the vitamin. Loss of vitamin A in the digestive tract was great.

ENZYMATIC EFFICIENCY IN AVITAMINOSIS. No disturbance in tryptic or ereptic digestion of casein has been found in uncomplicated vitamin B deficiency or in a deficiency of the vitamin B complex.

Journal of Nutrition

Vol. 8, December, 1934

The effect of prunes and the water extract of prunes on the plasma CO_2 combining capacity and composition of the urine when included in acid, neutral and uncontrolled diets. E. Mrak, C. Smith, J. Fessler, H. Lambert and T. Harper.—p. 633.

* Human milk studies. XVI. Vitamin D potency as influenced by supplementing the diet of the mother during pregnancy and lactation with cow's milk fortified with a concentration of cod liver oil. D. J. Barnes, F. Cope, H. A. Hunscher and I. G. Macy.—p. 647.

Vol. 9, January, 1935

The stability of vitamins B (B_1), G (B_2) and B_4. J. A. Keenan, O. L. Kline, C. A. Elvehjem and E. B. Hart.—p. 63.

A study of the iron metabolism of normal women. M. A. Ohlson and K. Daum.—p. 75.

* A study of the protein needs of preschool children. A. L. Daniels, M. K. Hutton, E. M. Knott, O. E. Wright, G. J. Everson and F. Scoular.—p. 91.

HUMAN MILK STUDIES. A woman whose diet was superior in quality and fortified with 2 quarts of vitamin D milk daily was unable to secrete a breast milk that was sufficiently enriched with vitamin D to heal rickets in colored infants or in rachitic rats. Her own breast-fed baby, however, showed no signs of rickets throughout the investigation.

PROTEIN NEEDS OF PRESCHOOL CHILDREN. Protein studies on children 37 to 66 months of age indicate that children of this age should receive approximately 3.2 grams of protein per kilogram, or 1.5 grams of protein per pound, in diets furnishing at least 50 per cent of the protein from animal sources.

Journal of the American Dental Association

Vol. 22, January, 1935

* Diet and dental caries. R. W. Bunting.—p. 114.

DIET AND DENTAL CARIES. Evidence submitted by a Michigan group of experimenters indicates that in the majority of cases dental caries will be definitely arrested by the adoption of a low sugar diet. Diet controls dental caries through the determination of the environment of the teeth, rather than through changes in the resistance of the tooth itself. These environmental conditions may be determined by the character and amount of food materials retained or by dietary metabolic influences.

Journal of the American Medical Association

Vol. 103, December 1, 1934

* The treatment of chronic hemolytic jaundice with liver extract. E. C. Reifenstein and E. G. Allen.—p. 1668.

* The treatment of hemophilia. H. W. Jones and L. M. Tocantins.—p. 1671.

* Value of muscular exercise in the treatment of diabetes mellitus. S. Soskin, C. O. Molander, B. Vidgoff and R. I. Henner.—p. 1767.

Vol. 103, December 15, 1934

* The effect of diets on calcium and phosphorus metabolism in dogs. Editorial.—p. 1857.

Vol. 103, December 22, 1934

* Dinitrophenol in obesity. Editorial.—p. 1950.

* The nature and food value of beer. Editorial.—p. 1951.

Vol. 103, December 29, 1934

Complications of peptic ulcer. S. M. Jordan and E. D. Kiefer.—p. 2004.

* The effect of vitamin A on the common cold. G. S. Shibley and T. D. Spies.—p. 2021.

Vol. 104, January 5, 1935

What should a patient with arthritis eat? W. Bauer.—p. 1.

Vol. 104, January 12, 1935

* Body build and restricted growth. Editorial.—p. 124.

Vol. 104, January 19, 1935

* Ulcerative colitis: II. The factor of deficiency states. T. T. Mackie and M. Henriques.—p. 175.

* Absorption and storage of vitamin A. Editorial.—p. 222.

Vol. 104, January 26, 1935

* Diet and relief. Editorial.—p. 320.

Retention of manganese. Current comment.—p. 321.

LIVER EXTRACT IN TREATMENT OF JAUNDICE. Three cases of chronic hemolytic jaundice showed definite clinical improvement when treated with liver extract. It is recommended that further observations are necessary before definite conclusions can be drawn.

TREATMENT OF HEMOPHILIA. In view of the hereditary character of hemophilia, an effort should be made to control its spread. A high protein diet has been advised but it has not yet been demonstrated to be very beneficial. Vitamin therapy has not been successful to any extent.

EXERCISE IN DIABETES MELLITUS. Two cases of uncomplicated diabetes were observed before and after a systematic course of physical training. Although the muscular work and physical conditioning produced their usual effects on the general well-being of the subjects, no significant improvement in the diabetic tolerance was obtained.

EFFECT OF DIET ON CALCIUM AND PHOSPHORUS METABOLISM. The largest storage of both calcium and phosphorus occurred when dogs were fed alkaline or neutral diets, both with and without vitamin D, and the lowest storage when fed acid diets without vitamin D. The dogs fed alkaline diets were usually larger at every age than comparable animals on the other diets. A definite superiority in growth rate was observed also in the animals given cod liver oil.

DINITROPHENOL IN OBESITY. Dinitrophenol increases the tissue metabolism, probably by direct action on the cells and without producing the side actions that accompany metabolic stimulation by thyroid. This drug has potential dangers when used indiscriminately and should be used only when ordinary methods have failed.

NATURE AND FOOD VALUE OF BEER. Beer is essentially a fermented beverage prepared from an infusion of hops and malted barley, with or without unmalted grains other than barley. The food value of beer is not wholly dependent on the alcoholic content. Lusk states that "a liter of German beer contains from 5 to 6 per cent extractives and from 3 to 4 per cent alcohol." Christie concludes that light beers are ideal for the undernourished.

VITAMIN A AND THE COMMON COLD. A group of 241 adult volunteers were observed for 56 weeks. Vitamin A in the form of halibut liver oil was administered in excess in large weekly doses to the test group and the effect on the incidence, severity and duration of the cold studied. It was found that vitamin A has no effect on the incidence or severity of colds. Evidence suggests that vitamin A shortens the duration of colds slightly in the winter months.

BODY BUILD AND RESTRICTED GROWTH. Three large groups of infants were used to determine the relationship between retarded growth and the so-called body build in young human subjects. At the end of a year the supervised groups were superior to the underprivileged groups in respect to the ratio of the lateral measurements to body length. Results of these comparative studies on infants indicate that the human subject responds to early unfavorable environment much the same as do experimental animals. It is probable that subtle factors may exert sufficiently extensive effects on groups of people as to alter national types of population.

ULCERATIVE COLITIS. Chronic vitamin deficiency produces a variety of vague borderline states of ill health. Indications of deficiency disease were encountered in 47 cases of chronic ulcerative colitis. Alterations in the mucous membrane of the tongue, dermatitis, and anemia were commonly found.

ABSORPTION OF VITAMIN A. Vitamin A, indispensable for normal function as well as for intact structure, is exposed to many uncertainties before it is stored in the body. Normal digestion and absorption of fats is a prerequisite to the utilization of this food factor. Both carotene and vitamin A can be prevented from entering the body by certain therapeutic agents. Furthermore, recent studies show that it is easier to maintain those stores than to replenish them. Vitamin A continues to merit consideration.

DIET AND RELIEF. In providing any diet it is necessary to consider not only the essentials, such as proper proportions of protein, carbohydrates and fats, mineral salts and vitamins, but also those factors of racial taste

and preference which have so much to do with the creation or loss of appetite. Thus it has been necessary for relief organizations to work out lists of food that will appeal to the various racial and national groups.

Modern Hospital

Vol. 43, December, 1934

Small hospital Christmas cheer. A. E. Boller.—p. 94.
No. 6.—Christmas salad. A. Shircliffe.—p. 106.
December breakfast and supper menus. W. H. Erickson.—p. 108.

Vol. 44, January, 1935

* The modern approach to diet therapy. M. A. Bridges.—p. 98.
* Choosing the dietitian. Q. O. Dodge.—p. 104.
No. 7.—Black-eyed susan salad. A. Shircliffe.—p. 106.
January breakfast and supper menus. N. T. Wolfe.—p. 108.
February breakfast and supper menus. M. W. Northrup.—p. 110.

MODERN APPROACH TO DIET THERAPY. In order to prescribe properly a satisfactory diet it is necessary to have a dietary case history and a complete chemical blood analysis. Freak diets are dangerous. The proper attitude to assume in reference to any newly developed diet is to check its principles against known physiologic demands. When these are met and when such things as palatability and variety are accomplished, together with successful demonstration of clinical response, then such a dietary is worthy of commendation.

CHOOSING THE DIETITIAN. There are three assets which the nutrition head must bring to her job: sound professional training and experience, personality, administrative ability.

ASSOCIATION PROGRESS

President's Message

Three meetings of interest to the membership were held during the month of January.

First came that of the Finance Committee. It has been noted in these columns that this committee is composed of the treasurer, as chairman, the president, the president-elect, Mary Lindsley, M. Faith McAuley, and the business manager as member ex-officio. Each interest was carefully considered in its relation to the entire work of the Association, and a budget worked out to present to the Executive Committee. One's personal budget is difficult to plan, but it is nothing compared to the responsibility imposed on these five persons to see that equitable distribution was made of the available funds.

The Executive Committee met following the session of the Finance Committee. The JOURNAL editor, the chairman of public information, and the business manager were also present. The sessions, covering many more hours of the day than approved by the N R A, still left us short of time. Your Executive Committee does take its work seriously, and no decisions of importance are made without due discussion. The proposed budget, recommended by the Finance Committee, was adopted with a few minor changes. We hope we may live within it.

All of you are vitally concerned with the third meeting which was held in Cleveland, our next conference city. The business manager and your president met with the committee on local arrangements and the program chairman. Such an enthusiastic group! There is no illusion in the mind of any one in Cleveland and Ohio as to the work and responsibility which lie before them; and, also, there is no thought of regret at the undertaking. Do you know how you may encourage them? Plan *your* budget for 1935 in such a way as to include a trip to this city in October, and show your appreciation of their efforts by your presence.

One more thought—our membership campaign manager tells me she closes her books April first. Have you done your part in making this a success? Have you approached any or all of your friends and acquaintances who are eligible to join our Association? Have you explained to them how much this step would mean to them professionally? If not, will you do so within a week after reading this announcement? Let us make *three thousand members for 1935* our goal.—LAURA COMSTOCK.

MID-WINTER EXECUTIVE COMMITTEE MEETING

There was a full attendance of the Executive Committee at the Blackstone Hotel, Chicago, for its meeting which convened at 9:30 a.m. January 5. The section chairmen presented reports and plans for their work for the coming year. Other reports presented were those of the inspection chairman, chairman of public information, affiliation chairman, business manager, JOURNAL editor, and chairman of education exhibits. The committee voted to hold the 1935 meeting at the Cleveland Hotel, Cleveland, Ohio, from October 27 to 31, inclusive. The report of the committee appointed to study the appointment of an executive secretary for the Association was presented. It was decided that the present financial situation did not warrant the filling of such a position in the Association at present.

After holding five sessions, the meeting was adjourned at 5 p.m. January 6 for a dinner meeting as guests of Katherine Mitchell, president-elect, at the Michael Reese Hospital.

MEMBERSHIP CAMPAIGN REPORT

It has been gratifying to have sixteen members added to the national roster from four western states, Oklahoma, Colorado, Utah and Nebraska. If these states with so few dietitians can get new members, do you not think every state can find eligible persons within its borders?

Is there not some one in your community who should be a member? Will you not make it your responsibility to approach these people and acquaint them with the advantages of membership? In the January JOUR-

NAL you will find a list of all the state chairmen. Report to your chairman the names of any applicants you have secured or any person whom you think should be invited to join. She has the membership blanks and any information you may need to help secure members.

The drive will close April 1, 1935, which means that there will be only one more report published in the JOURNAL. This will include the names of all state chairmen and the complete list of new members. Let our slogan be "A report from every Chairman."—EFFIE MAY WINGER.

NUTRITION EXHIBIT AT 1934 MEETING OF AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The American Student, published quarterly by Phi Beta Kappa, in its January 1935 number notes the coöperation of the Committee on Scientific Exhibits of the American Medical Association with the American Dietetic Association in presenting an exhibit before the A. A. A. S. in December. The appointment of a committee from the American Dietetic Association to coöperate with the American Medical Association on nutrition exhibits was announced in this JOURNAL for January. Mrs. Anna DePlanter Bowes was appointed to serve on a committee for the first joint exhibit of the Associations, as presented before the A. A. A. S. Since lack of time prevented the preparation of a special new exhibit, Dr. Hull of the A. M. A. selected certain parts of the nutrition display shown in June 1934 before the A. M. A., as a basis for the exhibit and included available nutrition exhibit material from the A. D. A. which seemed best suited to the general plan. Delays in assembling material prevented using the services of a local committee made up of Martha Alderman, Sadye Adelson and Marion Bell. The exhibit was completed however, by Dorothy Lenfest, Anna Boller and Helen Mitchell in Chicago and shipped directly to the convention city, Pittsburgh. An announcement of the exhibit appeared in the general program of the A. A. A. S. as follows:

AMERICAN MEDICAL ASSOCIATION

The Committee on Scientific Exhibit of the American Medical Association, through a special exhibit committee on nutrition, composed of Dr. Walter C. Alvarez, Mayo Clinic, Rochester, Minn., Dr. Reginald Fitz, Boston, Mass., and Dr. P. C. Jeans, Iowa City, Iowa, is coöperating with the American Dietetic Association in presenting an exhibit on nutrition, consisting of photographs, transparencies, models, charts and literature showing various phases of the problem of nutrition, but dealing especially with reduction diets, overfeeding diets and diets for the correction of constipation and diarrhea.

Mrs. Bowes, assisted by Rena S. Eckman and Irene Willson, effectively carried out Dr. Hull's written suggestions for the use of the display material. The sign over the booth read:

NUTRITION—FACTS AND FADS
AMERICAN MEDICAL ASSOCIATION COÖPERATING WITH THE AMERICAN DIETETIC ASSOCIATION

Under nutrition facts, displays of the A. M. A. appeared in the center of the booth. The subjects included an anticonstipation diet, a reduction diet for obesity, transparencies of persons who need a normal diet and persons whose diet should have been more carefully regulated, food models, and books on diet.

Under nutrition fads, much of the material collected by the public information committee of the A. D. A. was included, in addition to posters prepared by the A. M. A.

Teachers, research workers, physicians and medical students were most interested in securing source material. Dentists and dental students desired simply written literature on diet in relation to teeth to be given to patients. Such requests were referred to the American Dental Association and to institutions where extensive research on nutrition has been done. Many people visiting the booth became conscious for the first time that there are such organizations as the American Medical Association and the American Dietetic Association, to whom

questions on food, nutrition, diet and drugs may be referred.

Mrs. Bowes felt that there should be a clearer differentiation between dietary factual material and dietary faddist material. The A. M. A.'s poster on obesity cures stood out to advantage in this respect; here facts were stated in plain language which left no doubt in the minds of readers. It was clearly shown that if food fad material was used it should be possible at the same time to direct the inquirer to graphic displays of right dietary paths. A common question was: Is this exhibit recommending Dr. Hay's food combinations? As was to be expected, variations of the old comment appeared: "I know that those food combinations are all right because I have tried them. I am a trained nurse and I know what I am talking about." "I know that these food combinations are all right because my doctor recommends them." "I know Dr. Hay's diet is all right because the smartest physicians say so." Other bromidic utterances were jotted down by the attendants in the booth: "That is a glandular disturbance; no one could get that fat by eating." "Getting fat like that is a disease. Food has nothing to do with it."

Mrs. Bowes' committee recommended that the group entitled "People Who Need a Complete Diet" be enlarged to include growing children of all ages, and average adults; that the use of food models in terms of healthful meals for adults or children of various ages be considered in future exhibits on general nutrition for both lay and professional groups; that the food models have another set of labels indicating weight in ounces and total calories per serving for lay groups; that the pamphlets prepared by the American Medical Association on nostrums, quacks and "cures" of various types be added to any future exhibits on diet facts and fads; that a carefully prepared reference list on reliable nutrition and diet information be available; and that the present headings on the American Dietetic Association's food fad posters be carefully reconsidered.

REPORT OF INSPECTION CHAIRMAN

By action of the Executive Committee January 6, the approval of the American Dietetic Association to the training course for dietitians given at Rochester General Hospital, Rochester, N. Y. will be withdrawn at the close of the period of training of the group of students admitted in September, 1934.

The following training courses for hospital dietitians have been approved for the current year by action of the Executive Committee: St. Luke's Hospital, Chicago; University Hospitals—Minnesota General Hospital, Minneapolis; Ancker Hospital, St. Paul; St. Mary's Hospital, Rochester, Minn. Details concerning the first three of these courses appeared in the November 1934 JOURNAL. Affiliation plans for the last-named course are as follows:

St. Mary's Hospital (Sister Mary Victor), 9½ months.

Affiliations: 6 weeks at St. Joseph's Hospital, Milwaukee (Sister Mary Jovita), food purchasing, cost accounting, central tray service, infant formulae. Two weeks at Mayo Clinic (Mary Foley), instruction of out-patients. Two weeks at Infant and Child Welfare Society (Dr. Wood), instruction of preschool children.

Only two courses listed in the November JOURNAL still have provisional approval status:

Saint Louis University Course, St. Louis, Mo.

Christ Hospital Course, Cincinnati (affiliation plans incomplete).

We hope that final approval can be granted to these courses before the May JOURNAL goes to press.

Certificates will not be sent to those hospitals which were approved after July 1, 1934. They will be included in the list inspected before October, 1935. A new form of certificate is being planned.

The suggestion has come from one of the approved training courses that home economics students who are interested in hospital dietetics try to gain some type of experience, between the junior and senior years, in a well-organized hospital dietary department. Those who sent in the suggestion were of the opinion that this would give such students enough contact with hospital food problems and institutional life to enable them to judge

more wisely if that is the profession they wish to enter. We ask heads of home economics departments to consider this suggestion as applied especially to students who are uncertain as to whether they wish to become dietitians.

We plan to publish in this section of the JOURNAL, from time to time, data concerning hospitals and allied organizations which are equipped to give selected specialized training to experienced dietitians or to give experience in applied diet therapy to college teachers of nutrition. Information as to probable cost, length of time required, and other details of interest will be included. Data are now available from three such institutions:

Scripps Metabolic Clinic, La Jolla, Cal. (Helen B. Anderson.)

Eligibility: graduates of approved hospital training courses who have had several years of experience since graduation; college or university teachers of nutrition; university graduates who have majored in nutrition and are interested in research in foods.

Length of course: 3 months or more.

Type of experience available: therapeutic diets; metabolic studies; work with medical staff and patients; lectures and seminars; research.

Cost: registration fee, $5.00; room and board $40.00 or more per month. No college credit given.

New York Hospitals, 525 E. 68th St., New York City. (S. Margaret Gillam.)

Enrollment not to exceed 20 properly qualified students who are registered at Teachers College, Columbia University. Course lasts from June 1 to August 16, 1935, and will consist of post-graduate lectures and practical experience in selected phases of hospital food administration. Eight points credit at Teachers College will be granted for this course; two additional points must be carried at the College, however.

Michael Reese Hospital, 29th and Ellis Ave., Chicago. (Katherine Mitchell.)

Eligibility: experienced dietitians.

Length of course: (1) observation and study of the organization of the department,—not less than one month; (2) special work in diet therapy, 3 months; (3) special work in food administration problems, 4 months.

Cost: $50.00 per month plus cost of room outside.—MARTHA KOEHNE.

Editor's note.—In addition to the course in Field Practice at the New York Hospital, for which application should be made before April 15 to Professor Mary de G. Bryan, Teachers College, the following courses in institutional management, which are being given at Teachers College this semester, may be of interest: Food Purchasing for Institutions, Adeline Wood, instructor; and Institution Accounting, Nina Miller, instructor.

CONDENSED REPORT OF COMMITTEE ON SURVEY OF QUANTITY COOKERY COURSES[1]

This survey was carried out jointly by the American Dietetic Association and the institution section of the American Home Economics Association. Questionnaires were sent to 162 colleges, of which 74 reported as offering some work in quantity cookery. After an analysis of the data collected, suggestions, classifications and a tentative outline for content of course were made. No attempt was made to rate the various courses; each college can do this for itself in the light of what is being given elsewhere.

Considerable variation in names and content of courses was found. "Quantity Cookery" and "Large Quantity Cookery" appear most often. The average credit seemed to be 3 hours, the number in classes 10 to 15.

[1] This survey was carried out under the direction of a committee consisting of Evelyn Smith, Chairman, Inez Prudent, LaVelle Wood, and Bessie Brooks West. A preliminary report appears in the *Journal of Home Economics* for October, 1934, and is referred to in the report of the Department of Home Economics in Institution Administration on page 29 of the Association's *Bulletin*. A preliminary report was also presented at the October meeting of the American Dietetic Association.

Most courses offer a lecture or quiz period in connection with the laboratory work and encourage students to develop an investigational attitude through the carrying out of various special studies. A list of these is submitted. "Instructor" or "assistant professor" are the most common titles of instructors. Often "director of cafeteria" or dormitory is added to one of the above titles.

Courses are divided according to the following classification: Class A—those courses where *several* types of laboratory facilities are available, e.g., cafeteria, dormitory, tearoom (24 courses in this group); Class B—those courses where only *one* type of laboratory, usually a cafeteria or a tearoom, is used, with some catering (33 courses in this group); Class C—those courses where there is *no* laboratory provided and students are sent to local plants, usually with no regular time or duties and often only for observation, or where only occasional catering is done for very small numbers (16 courses in this group). The cafeteria, alone, or with a tearoom and catering combined was the most common type of laboratory. The sending of students out to local institutions would not seem to offer opportunity for formal instruction in quantity cookery, nor is occasional catering to from 2 to 30 people quite adequate for instruction in such courses. Most courses reported feeding between 50 and 200 people at the noon meal. Twenty-five reported serving 3 meals a day. Forty colleges report that the work is done by students and employees. Twenty-nine reported work by students only, and 3 by employees only. The student-employee plan seems to be best for it should then be possible to relieve the students of considerable routine work that is of no educational value. Courses where the employees do all the work and students only observe should be condemned.

Since some courses were offering quantity cookery without adequate laboratory facilities and equipment, a minimum list of necessary equipment is submitted. A list of type of foods prepared and hours spent by most colleges on each type is given. It is recommended that as much variety as possible be offered.

SUGGESTED COURSE IN QUANTITY COOKERY BASED ON FINDINGS

Name: "Quantity Cookery" or "Large Quantity Cookery."

Credit: 3 credits—1 lecture or quiz, 6 hours laboratory.

Prerequisites: Elementary foods and dietetics.

College year given: Junior or senior.

Type of Laboratory: Students and employees.

Administration: Laboratory should be under the administration of home economics department.

Content of Course

1. *Food Preparation.* Division of time for 15 weeks of laboratory time, for a 3 credit course follows. This is merely a suggested division and could be somewhat modified by circumstances.

Soups	3– 4 hours
Meats	8–10 "
Meat substitutes	4– 6 "
Vegetables	10–12 "
Salads	12–15 "
Pies, cakes	10–15 "
Breads and hot breads	4– 6 "
Desserts	4– 6 "
Beverages	2 "
Sandwiches	2– 4 "
Short orders	2– 4 "
Other duties	8–10 "

2. *Necessary Studies:* time and waste in preparation; cost and yield of recipes and menu-making (should be studied constantly through the course); and testing of new recipes (other studies may be added as desired, *see* list which follows).
3. *Equipment:* Essentials consist of the following: range, mixer, coffee urns, steam table, vegetable peeler, dishwasher, stack ovens and steamers. Desirable equipment includes: toasters, stock kettles, bread slicer, water coolers, meat slicers, silex urns, cashier and checker.
4. *Laboratory work* should be supplemented by a discussion of: methods of prepara-

tion, standard products, menu planning and care of equipment.

5. *General suggestions.* It is desirable to have students keep cards or notebooks. Supplementary mimeographed material should be provided. Some serving experience should be given in connection with the preparation. Some managerial experience should be provided. Field trips should be encouraged.

Other studies suitable for investigational work, suggested by the committee are: recipe and suggestion collecting; special problems in menu making (seasonal foods); catering for various types of occasions; studies of equipment as to placing, efficiency, care and use; sales analysis; advertising; demonstrations of food preparation; health work and surveys of dietaries; special papers on some phase of the work; special types of service and organizations; food habits and customs; best selling days; plate waste; building large quantity recipes; testing foods and commercial preparations; net and gross raw food cost; quantity studies; labor schedules.

The committee also suggested additional equipment which might be used, as: electric refrigerators, food choppers, small labor saving devices, doughnut machines, ice cream freezers, pea sheller, soda fountain and grill equipment, adding machine, deep fat fryer, thermotainer, mangle, electric bake oven, pressure cooker, steam roast ovens, milk shake mixer, hot plates, electric coffee mill, fruit peeler, dumb waiters, and juice extractors.

Some suggested references for food preparation were: Burgoin, A. M., "Large Quantity Recipes," Burgess Publishing Co., Minneapolis; Caron, E. C., "Famous Recipes of Famous Chefs," Robert C. McBride and Co., New York; Clyatt, H. B., "Food Controller and Calculator Including Basic Unit Recipes for 100," Carpenter Co., Cincinnati; Cowles, F. A., "Seven Hundred Recipes," Little Brown and Co., Boston; Hancock, E., "Salads and Sandwiches and Speciality Dishes for Restaurants and Tea Rooms," Harper Bros., New York; Schadt, M. E., "Cafeteria Recipes," Women's Press, New York; Shircliffe, A., "Edgewater Beach Sandwich Book," Hotel Monthly Press; Smedley, E., "Institutional Recipes," E. Smedley, Media, Pa.; Smith, F. L., "Recipes and Menus for 50," M. Barrows and Co., Boston; Richards and Treat, "Quantity Cooking—Menu Planning," Little Brown and Co., Boston; Bailey, B., "Menu Planning"; Halliday and Noble, "Hows and Whys of Cooking"; Dahl, "Profitable Menu Making for Hotels"; "Boston Cookery School Cook Book"; McKenney, E. C., "Cooking Problems for the Community Group," "Breads"; Bradley, A., "Cooking for Profit," Amer. School of Home Economics, Chicago; Lowe, "Experimental Cookery"; Gunn, L. M., "Table Service," J. B. Lippincott, Philadelphia; Hadwen and Bernard, "Recipes for 25," M. Barrows & Co., Boston; Gatchell and Helbing, "Handbook of Menu Planning"; Bell and Helser, "Essentials in Selection of Meat"; "Savarin Cook Book"; Ward, "Encyclopedia of Foods"; Child, Nils, Kolshorn, "Food Preparation Studies"; American Dietetic Association, "Quantity Recipes at Low Cost"; and quantity recipes issued by commercial firms.

AFFILIATION NEWS

Early in November, Elizabeth Yates, formerly dietitian at the Billings Deaconess Hospital, Billings, Montana, sent out a letter to dietitians residing in the state of Montana with a view to their attendance at a meeting for the purpose of furthering state organization. According to the national records, there are fourteen members of the national organization residing in the state of Montana, and probably as many more, who are not members of the Association, are engaged as dietitians. Miss Yates called attention to the increased local interest in the field of dietetics because of a gradual raising of standards in the nursing schools of the state, adding that nearly every hospital maintaining a training school has a dietitian for supervision of dietary service and teaching.

The meeting was held during the latter part of November and a very attractive program was arranged. The mimeographed program, with its artistic cover, listed the names and addresses of present and potential American Dietetic Association members. Ten of the active members and nine potential members were present at this organization

meeting. The following officers were elected: president, Mildred Tolles; vice-president, Marie Freytag; secretary, Elizabeth Young; treasurer, F. Elizabeth Yates.

In the report of the meeting, greetings were enclosed from the Home Economics Department of Montana State College, showing photographs of the home management house and the "buoyantly healthy" 1933 Patricia and 1934 David, infants "donated" for a year's care by college foster mothers.

THE QUESTION OF VACATIONS

To the girl just out of college, and accustomed to intermittent vacations, a training period of ten or twelve months without vacation seems a very long time. On the other hand, in business people think nothing of working fifty continuous weeks of the year.

The length of the training course would be the first important consideration, a vacation being much more justifiable for a ten to twelve months' course, than for an eight months' course. There is no question but that ample entertainment and recreation to fill a vacation period could be found in any metropolitan area. Things to be done and places to be seen, such as theatres, museums, shops and libraries, are literally inexhaustable. But if a vacation meant an increased length of the training course, the general vote would probably be against one, because of limited budgets of the majority of student dietitians.

A student dietitian, whether in a commercial institution or in a hospital, is being trained to accept administrative positions which always demand responsibility and undivided interests. As such, her vacation must be carefully planned, and even then there is always the possibility of interruption by any emergency situation.

Another factor which would be most important in considering a vacation for student dietitians is the time of the year when the course ends. One or two additional weeks in June or in September might be the difference between having either summer employment or a full year position, or in not having one.

A vote was taken by the student dietitians of the Women's Educational and Industrial Union in Boston, regarding the question of vacations involving an equivalent increase in the length of the course. The vote was unanimously against it, chiefly because of limited budgets.

Unquestionably, a week's vacation about midway through the training course would afford mental and physical relaxation which would be of considerable benefit to the student. On the principle that a person can do more work in forty-eight weeks than he can in forty-nine, if fatigue has to be reckoned with, a week's vacation might be arranged without any prolongation of the course.

Inasmuch as the majority of directors of approved student dietitian courses are in favor of some vacation during a year's course, the final decision as to whether or not there would be a vacation might be optional with the hospital or the institution in which the student is being trained in a course of that length. In courses of less than a year, the vacation policy might be recommended directly by the American Dietetic Association.—DORIS M. FISH. Women's Educational and Industrial Union, Boston.

JOURNAL CURRENT COMMENT COMMITTEE

The following appointments have been made by the president, Laura Comstock, for the current year: Chairman, Journal Current Comment, Administration Committee, Mrs. Cora K. Kusner; Chairman, Journal Current Comment, Community Education Committee, Mary E. Diefenderfer; Chairman, Journal Current Comment, Diet Therapy Committee, Mrs. Beula B. Marble; Chairman, Journal Current Comment, Professional Education Committee, Frances B. Floore. In the November JOURNAL, Massachusetts General Hospital appeared incorrectly instead of Beth Israel Hospital, following Mrs. Simmons' article under the Current Comment section.

NEWS NOTES

General Association News. The date and place of the 1935 meeting, as noted in the President's Message and on the cover of this JOURNAL, is Cleveland, Ohio, October 27 to 31. The local Cleveland and Ohio State Dietetic Associations are doing everything to make this convention a success. The following local committees for the convention have been appointed: local arrangements, Dorothy Throssell; hospitality, Mrs. Earl Hoover, Florence Bateson; tickets, Mardry Johnson, Elizabeth Harding; trips, Charlotte Stannard; publicity, Helen Robertson, Dorothy Shank; local program, Dorothy Proud; pages and ushers, Mrs. Helen Schwartz Trainer.

Some recent appointments or reappointments made by the President to the official roster of the Association are as follows: Dorothy Anderson, Jennie I. Rowntree, and S. Margaret Gillam to the Investigation Board; Phyllis Dawson Rowe to the Legislative Committee; Anna E. Boller and Mary A. Foley to the Exhibits Committee.

Miss Comstock announces that Inspection Committee "B" for the approval of administrative student dietitian courses is composed of: no. 1 member, Rosina Vance; no. 2 member, Marie Mount; no. 3 member, Cecilia McCarthy.

Colleen Cox, assistant editor of this JOURNAL in charge of the Current Literature Section, is now dietitian at Memorial Hospital, Cumberland, Maryland.

The United States Civil Service Commission has announced open competitive examinations as follows: Applications for the positions of chief dietitian, head dietitian, and staff dietitian in the Public Health Service and the Veterans' Administration must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than March 25, 1935.

The entrance salary is $2,300 to $2,900 a year for chief dietitian, $2,000 to $2,500 for head dietitian, and $1,800 to $2,160 for staff dietitian, subject to the usual deduction. An additional deduction will be made from the salary when quarters, subsistence and laundry are furnished. Appropriate education and experience are required. Full information may be obtained from the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city which has a post office of the first or the second class, or from the United States Civil Service Commission, Washington, D. C.

Vassar Students Their Own Cooks and Housemaids. The experiment at Blodgett Hall, which receives scientific evaluation in the leading article in this issue of the JOURNAL, is discussed from the feature writer's viewpoint in the New York *Sun* for January 31. The writer describes the organization of this self-help plan for thirty girls who supervise everything in the operation of their dormitory, working in two shifts, with two weeks on and two weeks off duty. According to the *Sun*, they have found that 40 cents a day will feed one girl "luxuriously," while, without extras, 33 cents will do. Cooking is, of course, the most interesting part of the work, with the cooks bringing their ideas from all corners of the United States and beyond. Sunday is planned to be a real day of rest; only two meals are served, a large breakfast at noon and an evening tea, a social, cosy affair when guests are welcome. This is the third year of the experiment which seems to be meeting with great favor, both among the participants and among its sponsors.

The New York Diabetes Association has recently been formed in affiliation with the New York Tuberculosis and Health Association to carry on a campaign against the disease, to be financed by a special contribution of $15,000 made by Lucius N. Littauer. The organization will act as a clearing house for the study of diabetes as a health problem, devise measures for its control, assist in the formation of an association of clinics dealing with diabetes, develop graduate instruction for physicians, carry on health education of the general public in matters relating to diabetes, and obtain the provision of insulin

for indigent sufferers and nursing service and hospitalization for all who require it. In its council will be included representatives of the tuberculosis and health associations, New York Academy of Medicine, city departments of health and hospitals, the five county medical societies, the schools of medicine, public and private hospital authorities, social and welfare agencies and interested laymen.

The Bulletin of the California Dietetic Association for November 1934 carries an interesting editorial on the principles of professional ethics for dietitians. Katharine Brown, of 511 So. Bonnie Brae, Los Angeles, is editor of the *Bulletin*.

Feeding a Family at Low Cost is the title of a booklet recently prepared by the Evaporated Milk Association. It discusses essential food for a family, how to save in buying, how to plan meals, and minimum food requirements. Suggested menus for a week are given.

The Fourth International Hospital Congress will be held in Rome May 5 to 12, 1935. The following subjects will be discussed: the hospital as a link in a systematic public health service; the equipment and technical appliances of the hospital; the function and protection of the hospital in times of national calamity; and the importance of each main group of the hospital staff with regard to the relations of the hospital to the community. All particulars regarding the congress can be obtained by writing to the Bureau of the I. H. A., Cantonal Hospital, Lucerne, Switzerland.

Federal Food and Drug Administration. According to the report of activities during the year ended June 30, 1934, more than 6000 samples of fruits and vegetables were analyzed for poisonous residues of sprays used in insecticides. Fifty-eight consignments were found to contain "dangerous" quantities and these were seized. The Administration considers this work its most important single activity. From the large number of shipments seized, spray residues must constitute an important menace to the public health, particularly in view of recent studies on chronic poisoning with heavy metals, for instance those that implicate lead intoxication in the etiology of multiple sclerosis.

A New Job for the Dietitian. Pearl Andrews, as dietitian of the New York, New Haven and Hartford Railroad, is pioneering in a new field for women, according to a recent article in the New York *Sun*. Miss Andrews sees to it that between forty and fifty thousand persons a month, or an average of 1500 a day are fed. During the football season, it was part of her work to plan special menus for the teams, coaches and rooters who travelled by train. Before the Army-Yale game, preparations had to be made to feed luncheon and dinner to 1300 Army boys, luncheon to be served just before New Haven was reached, and dinner to be provided on the train as soon as the train started homeward. Special menus are also planned for many other groups travelling between New York and Boston. Miss Andrews supervises the work of about 300 employees in the 23 diners operated by her company. She has been in this position since last April and feels that dining car management offers a field in which women are quite sure to be numerous in the near future.

Low Cost Cookery Classes. According to a recent notice in the daily press, Pratt Institute dietitians have opened three new low-cost cookery classes in Manhattan, making a total of 19 now operated by student demonstrators in Brooklyn and New York settlement houses. Senior students contribute two hours a week to the supervision of community classes as part of their practice work in field nutrition. The idea was introduced four years ago as an educational experiment in Brooklyn, and proved of such practical value that more classes have been added each year.

Another indication of Pratt's variety of interests is the Hobby Show recently arranged by members of the faculty of the School of Household Science and Arts. As a part of this exhibition, Emma Feeney showed sixty photographs and etchings made during vacation travels in Europe and Canada.

Syracuse University Alumni News for October, 1934, reports an interview with Dr. Anne Bourquin, professor of nutrition, and with Florence Quast, cafeteria manager, on the subject of the health program of the university. Dr. Bourquin said that general education in nutrition at the University is reinforced by individual case work. According to Miss Quast, the cafeteria is coöperating with the health program by placement of food and price manipulation. In the hope that the essentials will be chosen first, the salads are given first position, with meat and vegetables next and desserts last. Carefully balanced combinations are offered at special prices to encourage good choices.

Colorado Dietetic Association. At the July meeting, officers were elected as follows: president, Ruby Kysar; vice-president, Edith Forsman Lee; secretary, Virginia Bixler; treasurer, Rosella Handfeld. Committee chairmen for the following year are: professional education, Lydia Beck; community education, Emma Hallett; diet therapy, Verdi Miller; administration, Fern Stone; program, Elvia Gauss; social, Mary Ruetz.

The October meeting was held in connection with the Colorado Hospital Association at the Cosmopolitan Hotel, Denver. Fern Stone was appointed by the executive committee to fill the vacancy in the office of vice-president. Louise Bartels, Grace Pierce, Marion Brooks, Mary Elizabeth Prother, Esther Gambill and Evelyn McNary were accepted for membership in the organization. Cora Kusner opened a discussion concerning hospital employees requiring special diets. Fern Stone presented a paper on "Further Utilization of the Therapeutic Dietitian by the Medical Staff."

The January meeting was held at the Antlers Hotel, Colorado Springs, and the following program given: "The Allergic Patient as a Dietetic Problem," Dr. W. C. Service; "Report of the National Committee," Ruby Kysar; Abstracts of Recent Articles on Arthritis, Elvia Gauss; and "Nutrition for Children," Dr. E. L. Timman.

Connecticut State Dietetic Association. The third annual meeting was a dinner meeting at the Faculty Club in New Haven, November 21. Dr. A. H. Smith of the Department of Physiological Chemistry, Yale University, spoke on "Recent Contributions to Nutrition." Madeline Revare of William Wirt Winchester Hospital was elected president of the Association.

Althea Russell has left the staff of New Haven Hospital to join that of St. Lukes in San Francisco. Agnes Sawby of Chicago has taken Miss Russell's place at the New Haven Hospital.

Edna Langdon, formerly of Lakeview Hospital, Danville, Illinois, has taken a position on the staff of Yale University as dietitian of the Sterling Divinity Quadrangle.

District of Columbia Dietetic Association. Roy Lyman Sexton was speaker at the January meeting at Sibley Hospital, with Rowena Roberts, program chairman, as hostess. Interesting studies of malnutrition and restricted diet were presented by Dr. Sexton, who has done much work among the mountaineers of Shenandoah National Park.

Ruth Atwater, vice president of the American Dietetic Association attended the mid-year Executive Committee meeting in Chicago, January 5, 1935.

Head of the Lakes Dietetic Association was organized on October 29 under the leadership of Mercedes Johnson of St. Mary's Hospital, Duluth, Minnesota. The membership includes all eligible dietitians in the northern district of Minnesota and Wisconsin. The following are members: Mary Pickles, Miller Memorial Hospital, Duluth; Mary Ellen McLeod, St. Luke's Hospital, Duluth; Mercedes Johnson, St. Mary's Hospital, Duluth; Marie Lindbergh, Duluth State Teachers College; Clarice Johnson, Nopeming Sanatorium, Nopeming, Minn.; Dorotha Berg, County Hospital, Buhl, Minn.; Madeline Fischbach, St. Mary's Hospital, Superior, Wis.; Lillian Lucia, Middle River Sanatorium, Middle River, Wis., Lillian Ahlmstrom, Duluth.

At the January meeting, officers were elected as follows: president, Mercedes Johnson; vice president, Mary Ellen McLeod; secretary-treasurer, Mary Pickles.

Committees were appointed for the furthering of educational and social programs.

Maryland Dietetic Association's December meeting took the form of a most varied exhibit. Every institution was invited to display something in the form of posters, table decorations, foods, etc., that would be of interest to others. The response was most gratifying. The following is a list of institutions with their exhibits: Public School Cafeterias, posters, combination plate luncheons and several popular and nutritive recipes; Johns Hopkins Hospital, Christmas Buffet Supper Table, Hospital Record Forms; Betty Patterson, Specialty Shop, dainty sandwiches and cookies; Church Home Infirmary, Anne Merkle's Zoo (animals made from foods); Baltimore Dairy Council, Milk Exhibit; Springfield State Hospital, a German baker, Carl Kallenbach, exhibited a beautiful cake decorated with flowers made from almond paste; Lutherville College for Women, an interesting exhibit showing how fruits can be used in every course of a meal; Red Cross, posters, low cost food budgets, market orders, text books and recipes; Y. W. C. A., hot breads; State Normal School, Towson, inexpensive decorations for a Thanksgiving table and various ways of using candied grapefruit peel; Union Memorial Hospital, graphic method of teaching available glucose in average serving of common foods; and Sheppard and Enoch Pratt Hospital, table decorations, exhibit of home canned foods.

The long room in the Casino at Sheppard and Pratt Hospital was ideal for this meeting, and Alma Bering, as hostess, served delicious refreshments.

In January the Association visited two new hospitals which have been completed within the year, the University of Maryland and the Marine Hospitals. It was most interesting and instructive to compare the state and federal buildings.

Alma Bering, chief dietitian at the Sheppard and Enoch Pratt Hospital, Towson, is studying during the spring semester at Teachers College, Columbia University, New York.

Nellie Shepherd of Morgantown, West Virginia, and Jane Griswald, who has recently completed her student training at Johns Hopkins Hospital, have been added to the staff of assistant dietitians at the Sheppard and Enoch Pratt Hospital. Miss Shepherd was formerly with the Hillsview Sanitarium at Washington, Pennsylvania.

Mildred Wilson of Church Home and Infirmary was replaced January first by Margaret Fontaine of Manokin, Maryland. Miss Fontaine is a graduate of Western Maryland College at Westminster.

The staff and students of the Johns Hopkins Hospital Dietary Department had their annual Christmas dinner at the Baltimore Country Club.

Elizabeth MacKenzie, who completed her student training at the Johns Hopkins Hospital in 1933, is an assistant at St. Luke's Hospital in San Francisco. Althea Russell who was here at the same time, has also joined the staff of St. Luke's.

Louise Bronn, who finished her post graduate course in July, 1934, is in charge of the Cafe of the Golden Rule Department Store in St. Paul, Minnesota. Marian Wheeler, who has been a member of the staff since last July, has gone to the Indianapolis City Hospital, Indianapolis, Ind. Frances Kornfeld who was in the fall group of 1934, has secured a position with the Jewish Social Service Bureau of Baltimore.

Bertlyn Bosley, an assistant dietitian at the French Hospital in New York since January 1933, is returning to Hopkins in March as an administrative assistant.

The Massachusetts Dietetic Association. Dr. Frank N. Allan, of the Department of Medicine, Lahey Clinic, spoke at the December meeting on "Food Allergy." At the January meeting, Professor Johnson O'Connor of the Human Engineering Laboratory, Stevens Institute of Technology, Hoboken, New Jersey, and formerly of the Massachusetts Institute of Technology, gave a very interesting talk on "Careers and Natural Abilities."

Mary Tufts, formerly administrative dietitian at the New England Deaconness Hospital, is now at the Children's Hospital in the position held by Miss Budd, who resigned to be married.

Esther Redman, a graduate of Simmons College and Women's Educational and Industrial Union student dietitian course, has accepted a position as junior assistant in Bamberger's Restaurant, Newark, New Jersey.

The Michigan Dietetic Association held its mid-winter meeting at University Hospital, Ann Arbor, January 19. Following registration Dr. Raphael Isaacs of Simpson Memorial Institute spoke on "Anemias." An observation of the food service in University Hospital then took place, after which those present were luncheon guests of Dr. Harley Haynes and Mable MacLachlan. In the afternoon Leila McGuire spoke on "Nutrition in the Michigan ERA Program." Following the business meeting, a tea was held with members of the Department of Dietetics of University Hospital as hostesses.

The Minnesota State Dietetic Association's January meeting was planned by the professional education committee. Harriet Warmington reported on topics discussed at the affiliation dinner at the Washington meeting; and Grace Hood, Ph.D., acting head of the teacher's training section, Department of Home Economics, University of Minnesota, talked about "Problems in the Teaching of Adults." The diet therapy committee sponsored the program for the February meeting, at which Dr. Jane Leichsenring, associate professor of home economics, University of Minnesota, spoke on "Blood Regeneration"; and Dr. Edgar T. Herrmann, St. Paul internist, talked about the Abbess Hildegarde of Bingen, and medical traditions of the twelfth century.

New members of the Minnesota association are Inez Hobart, state extension nutritionist; Annette Mayer, in charge of The Rochester Diet Kitchen, Rochester, Minn.; and Lorraine Kulas, district nutritionist for the F E R A.

June McChord and Mary H. Kahn, formerly of Gallinger and Columbia hospitals in Washington, D. C., are now operating Belmont Inn, the tea room of an apartment hotel in Minneapolis.

Mary Foley, Rochester, Minn., has recently been elected a member of the permanent staff of The Mayo Clinic.

The Ohio Dietetic Association will hold its annual meeting in Columbus April 2 and 3 at the Deshler-Wallick Hotel.

Dietitians Association of Philadelphia. Martha Walker, chief dietitian, Jefferson Hospital, was chairman of the regular monthly meeting held on December 11 at Jefferson Hospital. Dr. Paul H. Nystrom, professor of marketing, Columbia University, discussed "Recent Changes in Consumer Demand."

On January 8, a group of 125 members met at Schrafft's for dinner and to hear Mr. Harold M. Hirsh, merchandise counsellor of L. Bamberger and Company, Newark, New Jersey, discuss the topic "Organization, Management and Control of Restaurant Operation." Mildred Stevens, cafeteria director of the Federal Reserve Bank, was chairman of the meeting.

Dr. L. Jean Bogert gave a talk on "Individualizing the Diet" at Temple University on February 12. The League of Nursing Education and home economics students from Beaver College, Drexel Institute, Temple University and the University of Pennsylvania were guests of the Association. Marion Bell presided at the meeting.

On February 26, Martha A. Alderman, director of the food clinic at Pennsylvania Hospital was chairman of a panel discussion on "Training the Dietitian." Members of the panel were Elizabeth Miller, Grace Godfrey, Henrietta Pribnow, Marion Bell, Regina M. Ashe, Minerva Harbage and a selected group of student dietitians from various hospitals.

The committee on low cost special diets has been very active during the past months. Sadye F. Adelson, chairman, reports that the results of the study being made by the committee will appear in printed form later in the Spring.

The Richmond Dietetic Association has had a season of considerable activity. Members have attended a number of conventions. Aileen Brown went to the American Hospital Association convention, and reported on the

fine exhibit of equipment and the delightful dinner for dietitians in attendance. In October, some twenty of the thirty members attended the national meeting in Washington including the banquet which was such a glorious climax of the meeting. Again, in November, members were well represented at the fall state convention in Norfolk. At the present time the group is eagerly awaiting the state Spring meeting.

Conventions, however, have not been the only stimulation for the Association. Dr. H. C. Sherman, Mitchell Professor of Chemistry, Columbia University, was the guest speaker of the Virginia Academy of Science, speaking on "Vitamins and Chemistry." Later Dr. Segard of the Wisconsin Alumnae Research Foundation spoke to the pediatricians and dietitians of the city on "Irradiated Milk." In December, Martha Creighton, head of the Virginia State Home Economics Education, spoke to the Association on "The Correlation of Teaching and Dietetics." At the January meeting Mariam Trexler, personnel instructor of the Miller and Rhoads Department Store, gave a talk on "Personnel Employment." All of the fall speakers have given points that members may apply to individual problems.

The more sociable pleasures have not been neglected. In December, Ruby Lake, Pine Camp Hospital, entertained at tea in honor of her sister Ruth Lake who had just returned from a year in Paris. Ruth Lake was sent by the dietary department of the Medical College of Virginia to the American Hospital of Paris, where she began the organization of a dietary department. In November members wished bon voyage to another of the local group, Kathryn Heitshu, who is doing excellent work in Paris at the present time.

In December, the Association was hostess at a tea in honor of the class in institutional management of the College of William and Mary, Williamsburg. This is the first year such a course has been offered, and Richmond dietitians are glad to encourage it.

At the present time, plans are underway for a benefit bridge, St. Patrick's day party to replenish the Association's funds. Helen Roll, general chairman, is holding conferences in order to press every member into service.

Celia Swecker is chairman of a committee to investigate the possibility of an institute for social service agents for six weeks. In this manner it is hoped to advance the professional field in the city.

The younger dietitians are looking at Gertrude Brown with respectful awe. Each month she has two more members for the association, but where she finds these and how she arouses such interest remains the mystery of the season.

Tennessee Dietetic Association. The Knoxville Dietetic Association was organized in Knoxville, December 15, 1934. The following officers were elected: president, Florence L. MacLeod; vice-president, Elizabeth Polk; secretary, Evelyn Hamilton; treasurer, Katherine Cotham.

Mary Peacock, of Chattanooga, president of Tennessee Dietetic Association, gave an interesting talk on the organization and the far-reaching possibilities of this Association.

The Knoxville Association will serve as the nucleus of work for East Tennessee, as well as for the city of Knoxville. All of Tennessee's four cities, Memphis, Nashville, Chattanooga and Knoxville, now have an organization, each of which also serves the state's divisions of West, Middle and East Tennessee.

The annual meeting was held in Nashville February 15.

Tidewater Dietetic Association held its annual election of officers January 15, 1935, at the Protestant Hospital, Norfolk, Virginia. The following officers were elected: president, Ruth K. Wright, Kings Daughter's Hospital, Portsmouth, Virginia; vice-president, Clara Turner, Protestant Hospital, Norfolk, Virginia; and secretary and treasurer, Eugenia Eley, Protestant Hospital, Norfolk, Virginia.

Tri-State Dietetic Association. As this JOURNAL goes to press, plans are being completed for another of Tri-State's interesting annual meetings. According to Mary T. Peacock, speakers are to include Dr. Beverly Douglas, Dr. Jessie Brodie, Salome Winckler and Laura Comstock.

Virginia State Dietetic Association. The November meeting was opened at the Monticello Hotel, Norfolk, November 9–10, 1934, with a dinner at which the group were welcomed by the president, Gertrude Brown, of Richmond. Addresses on topics of interest to the profession featured the after dinner session. Speakers were: Dr. Kinloch Nelson of Richmond on "Recent Changes in Therapeutic Diets," Dr. Oscar Swineford, Jr. of University of Virginia Hospital on "Food Allergy," and Dr. John Bell Williams of Richmond on "The Operation of a World War Hospital in France." Celia Swecker, chairman of the program committee, presided.

The morning business session was opened with the president's message. The reports from the secretary on standing membership and the treasurer on finances proved encouraging and gave each member present a feeling that the past year has been a successful one. Adoption of the new constitution was voted and passed.

Dr. C. P. Segard of the Wisconsin Alumni Research Bureau discussed "Vitamin D in Nutrition" at the afternoon meeting. Mrs. Bernice Reaney Varner, associate professor of home economics at Harrisonburg Teachers College, followed with an address on "The Balanced Dietitian."

A most enjoyable tea at the Marine Hospital, Mrs. Nellie Hall, hostess, concluded the meeting.

The executive committee meeting of the state association was held in Richmond the second week in February.

Mail addressed to members at the following addresses has been returned. Any information as to correct addresses of these members should be sent to the Business Office of the national Association. Gertrude Allison, 1219 G St. N.W., Washington, D. C.; Stella Cylkowski, St. Johns L. I. City Hospital, Long Island City, N. Y.; Mrs. Lillian Goodrow Drake, 555 13th Ave., Prospect Park, Fla.; G. Janet Emerson, 743 Church St., Elmira, N. Y.; Mrs. Louise Y. Gilbert, 5419 Kenmore, Chicago, Ill.; Mrs. Alice W. Goss, 1408 N. Alexandria Ave., Los Angeles, Calif.; Margaret A. McDonald, Nassau Co. Sanitarium, Farmingdale, L. I., N. Y.; Kineta Portlock, 350 Congress Ave., New Haven, Conn.; Sophie Sockness, Luther Hospital, Eau Claire, Wis.; Mrs. Ruth Christianson Williams, Sanator, S. D.; Mrs. Marie Degner Wogensen, Long Prairie, Minn.

WHO'S WHO IN THIS ISSUE

RUTH WHEELER needs no introduction to the members of the American Dietetic Association. She has been long and intimately connected with the Association's affairs, serving as president from 1924 to 1926 during which term of office this JOURNAL was founded. Dr. Wheeler has served continuously as a member of the Journal Board since its inception. Listed in *Who's Who in America* as a physiological chemist, Dr. Wheeler is known as well as a dietitian and teacher. She has taught at Pratt Institute, the University of Illinois, Goucher College, and in the University Hospitals of the State University of Iowa. Since 1926 she has been professor of nutrition and physiology at Vassar College and chairman of the Division of Euthenics since 1928. She was formerly consultant in nutrition of the Department of Medicine of the Presbyterian Hospital, New York City. Among her affiliations, she is a fellow of the American Association for the Advancement of Science, and a member of the American Society of Biological Chemists. Her published contributions in the fields of nutrition and nutrition education are many. RUTH MALLAY is executive secretary of the Institute of Euthenics.

LORENA RICHARDSON was graduated with a B.A. degree from the Household Science Department of University of Toronto, and took her student dietitian's course at St. Luke's Hospital, New York City in 1921. Anticipating the opportunities of the dietitian in the commercial field, she then served with a cooperative cafeteria in New York City, and was later the first Canadian to be employed as food supervisor in Childs Company, Toronto. She was in charge of Childs' research department in New York City when in 1928 she was asked to become assistant manager of restaurants in Robert Simpson Co., Toronto. In 1930 she was made manager of these famous restaurants and at present she is also manager of the ice cream factory, bakeshop, cake counter and catering department. Despite her many business activities, Miss Richardson has found time to serve as treasurer and president of the Ontario Dietetic Association and at present is chairman of the program committee of that organization.

ERWIN H. SCHELL, professor of business management, received his B.S. degree from Massachusetts Institute of Technology. Since 1931 he has been in charge of the department of business and engineering administration of that institution. He is a member of the Corporation of Simmons College, the American Management Association and the American Society of Mechanical Engineers.

CHARLES L. DRAIN, D.D.S., F.A.C.D., is associate professor of Preventive and Children's Dentistry of State University of Iowa, College of Dentistry. For the past ten years, in collaboration with J. D. BOYD, M.D., he has been

studying the nutritional control of dental caries. In addition to observations on children receiving therapeutic diets, studies have been made on orphanage groups and normal children. Reports from this Iowa group have been made since 1928 and appear in the leading journals of this country and England.

R. ADAMS DUTCHER, biochemist, received his master's degree at the University of Missouri. He has taught at South Dakota State College, University of Missouri, University of Illinois, Oregon State College, University of Minnesota and Pennsylvania State College. Since 1921 he has been head of the department of agricultural and biological chemistry at Pennsylvania State College. He is a member of several learned societies, including the Land Grant College advisory committee on vitamin research, chairman of the biochemical division of the American Chemical Society, and chairman of the vitamin terminology committee of the American Society of Biological Chemists.

INDEX TO VOLUME X

Abbreviations: abstr., abstract; a.p., association progress; book rev., book review; c.c., current comment; ed., editorial; sup., supplement to November issue, page numbers in italics.

ADAMS, G. (and Chatfield) Classification of fruits and vegetables according to their carbohydrate content, 383
Administration Section report (sup.) *24*
Administrative council report (sup.) *63*
Administrators wanted, L. Richardson, 459
Advertisers and exhibitors, membership co-operation with (a.p.) 432
Affiliation (a.p.) 265
  chairman's report (sup.) *17*
  news (a.p.) 518
Alderman, M. M., Hospital education exhibits (sup.) *68*
Allergy, cottonseed (abstr.) 349
  food (abstr.) 507
  food, revised elmination diets for (abstr.) 348
Anemia, nutritional, studies in (abstr.) 167
  pernicious (abstr.) 509
  pernicious, hematological response to brewer's yeast (abstr.) 165
  pernicious, species differences in organotherapy (abstr.) 166
  pernicious, yeast or vitamin B_2 in (abstr.) 427
Anemias, gastric juice in (abstr.) 507
Apples, Vitamin studies on, I. The vitamins A, B and C content of the Rome Beauty, Delicious, Stayman, Yellow Newtown and Winesap, I. A. Manville, A. S. McMinis and F. G. Chuinard, 135
Arthritis, chronic, metabolic and nutritional aspects (abstr.) 348
Association, single or double slate for (a.p.) 266
Auditor's condensed report (sup.) *18*
Avitaminosis, enzymatic effect of (abstr.) 510

Bacteria, new mechanism of defense against (abstr.) 348
Barber, M. I., Chairman's report, Community Education Section (sup.) *33*
Barborka, C. J., Treatment by diet (book rev.) 502
Basal metabolism, children (abstr.) 164
  metabolism, constancy in (abstr.) 508
BEARD, H. H., The prophylactic effect of vitamins A and D upon the prevention of the common cold and influenza, 193
BECKER, J. E., Increasing food values by mineralization and vitaminization, 391
Beer, nature and food value of (abstr.) 511
Beriberi following drastic voluntary dietary restriction (abstr.) 246
Bibliographies available (a.p.) 438
Blindness, night, nutritional (abstr.) 62
Body build and growth (abstr.) 511
BONE, M. L. (*see* Cole)
Book Reviews:
  Alimentacion, 59
  Anatomy of dessert, 503
  Annual report, Surgeon General, U. S. Public Health Service, 58
  Biochemical studies of nutritional problems, 344
  Careers for women, 57
  Child, The, 422
  Community canning centers, 162
  Dental decay among Texas school children, 347
  Diabetic manual, 57
  Diabetic manual for patients, 423
  Dictionary of 1001 menu terms, 505
  Diet reform simplified, 506
  Diet manual, St. Mary's Hospital, 504
  Diet manual, University of Nebraska College of Medicine, 243
  Diet and physical fitness, 425
  Diet of Texas school children, 161
  Diet at four levels of nutritive content and cost, 58
  Economies in food: quantity recipes using evaporated milk, 161
  Effect of acid, neutral and basic diets on the calcium and phosphorus metabolism of dogs, 423
  Food customs from abroad, 243
  Food for the diabetic, 424
  Food and health, 422
  Food for the young child, 504
  Green Mountain cook book, 504
  Hay dieting, 162

Health education material, 162
Health-giving dishes, 244
Home economics aids home stabilization in Michigan, 243
How to feed children from infancy onwards, 505
Jimmy Chew, 162
Man's natural food, 163
Mystery chef's own cook book, 505
Newer conception of nutrition, 162
Nutrition, 345
Nutrition and diet therapy, 345
Nutrition program and teaching outline, 346
Nutritive value of food purchased by dependent families, 347
Practice of dietetics, 422
Primer for diabetic patients, 243
Professional training of the hospital dietitian, 161
Report of the chief of the Bureau of Home Economics, 1933, 59
Report of the chief of the Bureau of Home Economics, 1934,
Rowland's diabetic cook book, 506
Rules for recovery from pulmonary tuberculosis, 423
Salt, water and health, 506
Scandinavian recipes, 505
Seven charts on meat cooking, 426
Shrinkage and heat penetration, during the roasting of lamb and mutton, 425
Special diets at low cost, 426
Suggested standards for house furnishings of residence halls, 162
Suggestive budget for families of low income, 346
This crisis in history, 346
Thoughtful planning for the low income, 162
Treatment by diet, 502
Vitamin A content of foods and feeds, 58
Vitamin B requirement of man, 502
Vitamin chart, 426
Your meals and your money, 344
Boyd, J. D. (*see* Drain)
Boyer, J. (and K. Cowdin) Hay dieting (book rev.) 162
Bray, M. M. (and Hawks and Dye) Food consumption of preschool children, 309
Bright's disease, chronic, treatment (abstr.) 428
Brown, F. A. (and Campbell, Stoner and Macy) A study of the therapeutic value of yeast, 29
Brown, L., Rules for recovery from pulmonary tuberculosis (book rev.) 423
Brupbacher-Bircher, B., Health-giving dishes (book rev.) 244
Bunyard, A. E., The anatomy of dessert (book rev.) 503
Business manager's report (sup.) *64*
meeting (sup.) *69*
Butler, A. M. (*see* MacKay)

Calcium metabolism, children, relation of milk to (abstr.) 60
Calories, forgotten (abstr.) 63
Campbell, M. B. (*see* Brown)
Carbohydrate content, Classification of fruits and vegetables according to their, G. Adams and C. Chatfield, 383
Carbohydrates, mechanism of gastric motor inhibitions from ingested (abstr.) 245
Carlson, L. (*see* Roberts)
Carotene and vitamin A content of colostrum (abstr.) 509
Cellulose, regenerated, laxative effect of (abstr.) 63
Chaney, M. S., Nutrition (book rev.) 345
Chatfield, C. (*see* Adams)
Child, nutrition and the growing (abstr.) 430
undernourished, and the public schools (c.c.) 237
Children, effect of varying sugar intake on nitrogen, calcium and phosphorus retention (abstr.) 164
Food consumption of preschool, M. M. Bray, J. E. Hawks and M. Dye, 309
protein needs of preschool (abstr.) 510
selection of malnourished (abstr.) 164
Chuinard, F. G., (*see* Manville)
Citric acid, urinary excretion (abstr.) 247
Clarke, H., The professional training of the hospital dietitian (book rev.) 161
Clean food, clean hands, clean dishes (abstr.) 61
Cleanliness in food handling, The problem of, L. Troutt, 24
Cod liver oil, The influence of body weight and the administration of, on industrial absenteeism, A. D. Holmes, M. G. Pigott, W. A. Sawyer and L. Comstock, 208

iodine content of (abstr.) 508
Cold, common, vitamin A and (abstr.) 511
Colds, vitamin A and (abstr.) 507
COLE, V. V. (and Curtis and Bone) The iodine content of hospital foods, 200
Colitis, ulcerative (abstr.) 511
Colostomy, management of (abstr.) 245
Communities, rural, college extension in (c. c.) 339
Community Education Section report (sup.) *33*
COMSTOCK, L. (*see* Holmes)
message from (c.c.) 337
reports of president-elect and affiliation chairman (sup.) *17*
Condiments and spices (a.p.) 438
Constitution and by-laws, recommended state (a.p.) 69
Convention, Engrams from the 1934 (ed.) 333
program (sup.) *70*
The Washington, D. C., 249
Cooking, institutional (a.p.) 172
Courses, approved, development of standards for (a.p.) 272
approved, news concerning (a.p.) 70, 170
quantity cookery (a.p.) 516
for student dietitians, List of approved training, 353
summary of discussion, dinner for directors of approved (a.p.) 433
Cowdin, K. (*see* Boyer)
Cowgill, G. R., The vitamin B requirement of man (book rev.) 502
Cox, C, Organization book (sup.) *69*
CURTIS, G. M. (*see* Cole)

Dahl, J. O., Dictionary of 1001 menu terms (book rev.) 505
Delegates, a model for (a.p.) 171
Dental caries in children, fat soluble vitamins and (abstr.) 351
caries, diet and (abstr.) 510
caries, Endogenous factors in the control and arrest of, C. L. Drain and J. D. Boyd, 471
caries, relation between physical character of food and (abstr.) 167
caries, studies in control of (abstr.) 247
decay and diet (abstr.) 508
Dermatitis due to aniline dye (abstr.) 246
Diabetes mellitus, exercise in (abstr.) 511
mellitus, inheritance of (abstr.) 508
new diets for children with (c.c.) 238
Diabetic child (abstr.) 349
coma in children (abstr.) 427
patient, instructing the (abstr.) 248
Diarrhea, raw apple diet in treatment (abstr.) 245
Diet tables in boarding school (abstr.) 63
therapy, modern approach to (abstr.) 512
Therapy Section report (sup.) *41*
treatment by (abstr.) 248
Diets to meet the lowered income, Adjustments in (ed.) 44
selected by college students (abstr.) 64
Dietary, Problems of the low cost, E. E. Hawley, 325
Dietetics, Early, S. T. Rorer, 289
Romantic versus factual (ed.) 489
Dietitian, The, as an administrator, E. H. Schell, 464
in Africa and Near East (abstr.) 352
in Catholic hospitals, status of (a.p.) 271
choosing the (abstr.) 512
in public institutions, The (ed.) 335
therapeutic, qualifications of (c.c.) 419
Dietitians, student, code of ethics for (a.p.) 268
student, Code of ethics for (ed.) 231
student, concerning (a.p.) 435
student, prayer (a.p.) 366
student, sponsoring social life of (c.c.) 342
student, training in work relationships (c.c.) 240
Digestion, effect of, on blood flow (abstr.) 245
gastric, of proteins versus carbohydrates (abstr.) 428
Dinitrophenol in nutritional disorders (abstr.) 427
Disease, deficiency, gastro-intestinal tract in (abstr.) 348
Dish breakage, our ever present problem (c.c.) 499
Dishwashing, chemistry of (c.c.) 338
Dodge, Q. O., president's report (sup.) *3*
DRAIN, C. L. (and Boyd) Endogenous factors in the control and arrest of dental caries, 471
DREXEL, H. (*see* Laird)
Drummond, J. C., Biochemical studies of nutritional problems (book rev.) 344
Dupain, G. Z., Diet and physical fitness (book rev.) 425

Dutcher, R. A., Some recent trends in vitamin research, 476
Dye, M. (*see* Bray)

Eck, E. M., treasurer's report (sup.) *18*
Egg yolk, utilization of iron and copper in (abstr.) 429
Energy exchange, Total, in relation to clinical medicine (ed.) 153
Enzymes, determinations of, pernicious anemia and pellagra (abstr.) 165
Escudero, P., Alimentacion (book rev.) 59
Executive committee, action of (sup.) *49*
committee, meetings (a.p.) 431, 513
Exercise, effect on gastric emptying time (abstr.) 60
influence on gastric digestion (abstr.) 60
Exhibit, hospital educational (sup.) *68*
at meeting of American Association for the Advancement of Science (a.p.) 514
permanent (a.p.) 431
plans of educational, committee (a.p.) 431

Fat of the feces (abstr.) 63
Feeding the average family in present day economic conditions, S. Mathews, 20
breast and artificial (abstr.) 350
and caring for the unemployed business woman, F. B. Floore, 40
Filene, C., Careers for women (book rev.) 57
Floore, F. B., Feeding and caring for the unemployed business woman, 40
Fluorine, effect of, on calcium and phosphorus metabolism (abstr.) 427
Food for the Byrd expedition (ed.) 233
control and the food ledger, M. F. McAuley, 1
costs, factors in control of (c.c.) 236
and Drugs Act revision (ed.) 492
expenditures, home management houses (abstr.) 351
fads in hospital practice, (c.c.) 158
freely selected by a college coöperative housekeeping group, A study of, R. Wheeler and R. Mallay, 453
preparation, student and (c.c.) 500
purchases, A shortened method for calculating the adequacy of family, R. Okey and M. G. Luck, 12
relation of, to alimentary fill (abstr.) 247
service, stopping leaks in (c.c.) 235
standards, Maintaining (ed.) 412
values, Increasing, by mineralization and vitaminization, J. E. Becker, 391
Foods, instinct in choice of (abstr.) 62
protective (abstr.) 430

Glycine, treatment, muscular dystrophy (abstr.) 428
Growth-promoting properties of vitamin G (abstr.) 429
Growth, relation of phenylalanine and tyrosine to (abstr.) 429

Hambidge, G., Your meals and your money (book rev.) 344
Harrington, M. M., Chairman's report, Professional Education Section (sup.) *46*
Hawks, J. E. (*see* Bray)
Hawley, E. E., Problems of the low cost dietary, 325
Hemoglobin production factors (abstr.) 164
regeneration, factors in food (abstr.) 64
Hemophilia, treatment of (abstr.) 511
Heseltine, M. M., Emergency relief and the dietitian, 407
Historian's report, H. S. Warmington (sup.) *64*
Hoelzel, F., Salt, water and health (book rev.) 506
Holmes, A. D. (and Pigott, Sawyer and Comstock) The influence of body weight and the administration of cod liver oil on industrial absenteeism, 208
Home economics, What the Bureau of, does for the consumer, L. Stanley, 401
Hookworm infection, improved diet and (abstr.) 430
Huddleson, M. P., Food for the diabetic (book rev.) 424
Journal editor's report (sup.) *58*
Hyperparathyroidism, laboratory research in (abstr.) 166
Hyperthyroidism and nutrition (abstr.) 167
Hypovitaminosis, onychia due to chronic (abstr.) 246

Infants, diet and inoculations of (abstr.) 427
Infection, nutrition and resistance to (abstr.) 350
Inorganic salts in nutrition (abstr.) 509
Inspection chairman, report of (a.p.) 515

chairman, supplementary report of (a.p.) 432
procedure (sup.) *55*
Intoxication, breast milk (abstr.) 245
Investigation board report (sup.) *63*
Iodine content of hospital foods, The, V. V. Cole, G. M. Curtis and M. L. Bone, 200
Iron, in biological materials (abstr.) 429
in the blood plasma and urine (abstr.) 165

Jaundice, liver extract treatment (abstr.) 510
John, H. J., Diabetic manual for patients (book rev.) 423
Joslin, E. P., A diabetic manual (book rev.) 57
Journal board report (sup.) *59*
current comment (a.p.) 172
current comment committee (a.p.) 519
editor's report (sup.) *58*

Ketogenic diet (abstr.) 164
diet, uses of (c.c.) 340
Ketonic urine, bactericidal action of (abstr.) 166
Kimmel, E., Report, publicity chairman (sup.) *68*
Kitchen, top floor (abstr.) 246
KOHMAN, E. F., Organic acids and the acid base relationship: oxalic acid in foods, 100

Labeling, descriptive or grade (c.c.) 493
LAIRD, D. A. (and Drexel) Experimenting with foods and sleep: I. Effects of varying types of food in offsetting sleep disturbances caused by hunger pangs and gastric distress—children and adults, 89
Law, do we need this (c.c.) 495
Legislative committee report (sup.) *65*
Lenfest, D. I., Business manager's report (sup.) *64*
Letter of application (c.c.) 420
Librarian's report (sup.) *64*
Lief, S., Diet reform simplified (book rev.) 506
How to feed children from infancy onwards (book rev.) 505
Lighting, Importance of proper (ed.) 413
Lindsley, M., Report of legislative committee (sup.) *65*
Liver, appetite stimulating and growth promoting property of (abstr.) 351
Lowenberg, M. E., Food for the young child (book rev.) 504
LUCK, M. G. (*see* Okey)

MACKAY, E. M. (and Butler) A comparison of the mineral (base) composition of dietaries as determined from tables and by analysis, 398
MACNAIR, V. (*see* Roberts)
MACY, I. G. (*see* Brown)
MALLAY, R. (*see* Wheeler)
MANVILLE, I. A. (and McMinis and Chuinard) Vitamin studies on apples: I. The vitamins A, B and C content of the Rome Beauty, Delicious, Stayman, Yellow Newtown and Winesap, 135
(and Chuinard) Vitamin studies on pears: II. vitamins A, B and C in the Winter Nelis, D'Anjou and Bosc after a short storage period, 217
MATHEWS, S., Feeding the average family in present day economic conditions, 20
MCAULEY, M. F., Chairman's report, Administration Section (sup.) *24*
Food control and the food ledger, 1
(and Wood) Economies in food. Quantity recipes using evaporated milk (book rev.) 161
MCMINIS, A. S. (*see* Manville)
Meat protein, effect of heat upon (abstr.) 167
Meeting, notes from the October (a.p.) 365
The 1934, Washington, D. C. (ed.) 44
Membership campaign (a.p.) 437, (sup.) *67*
campaign report (a.p.) 513
chairman's report (sup.) *23*
standards for (a.p.) 67
Metabolism, body build and (abstr.) 166
effect of diet on calcium and phosphorus (abstr.) 511
Mineral (ed.) 228
of women, cod liver oil and calcium and phosphorus (abstr.) 351
Microbiological examination of fruits and vegetables (abstr.) 165
Milk bottle, The fatal (ed.) 155
current production and consumption of (abstr.) 350
evaporated, protein, minerals and vitamins of (abstr.) 61
human, increasing vitamin potency of (abstr.) 64

influence of fluorine ingestion upon (abstr.) 166
in institution diets, The supplementary value of dry skim, L. J. Roberts, L. Carlson, and V. MacNair, 317
iodine content, human skimmed (abstr.) 508
pasteurization, nutritional aspects of (abstr.) 348
studies, human (abstr.) 510
supplies in the United States (abstr.) 246
supply, courts and (abstr.) 428
Mineral (base) composition of dietaries as determined from tables and by analysis, A comparison of the, E. M. MacKay and A. M. Butler, 398
oil, carotene and vitamin A in the presence of (abstr.) 351
Morgan, A. F., The effect of acid, neutral and basic diets on the calcium and phosphorus metabolism of dogs (book rev.) 423

News notes, 72, 174, 274, 368, 439, 520
Newburgh, L. H., The practice of dietetics (book rev.) 422
Nitrogen constitutents, non-protein (abstr.) 350
excretion (abstr.) 247
Notables, knowing our (a.p.) 71, 172, 272, 366
Nurses, state board examination questions for (a.p.) 69
Nutrition and the case worker (a.p.) 272
how to interest college students in (c.c.) 500
Newer trends in, S. L. Smith, 107
Nutritional status, new index of (abstr.) 63

Obesity, banana in the management of (abstr.) 245
dinitrophenol in (abstr.) 511
milk and banana diet for treatment of (abstr.) 246
relation of the plasma cholesterol to (abstr.) 61
treatment (abstr.) 508
Okey, R. (and Luck) A shortened method for calculating the adequacy of family food purchases, 12
Oregon nutrition council (a.p.) 171
Organization book (sup.) *68*
Oxalic acid in foods, Organic acids and the acid base relationship: E. F. Kohman, 100
acid in metabolism (abstr.) 428

Parathyroid glands in rickets and osteomalacia (abstr.) 61
tetany, low dietary phosphorus in treatment of (abstr.) 62
Pears, Vitamin studies on, II. Vitamins A, B and C in the Winter Nelis, D'Anjou and Bosc after a short storage period, I. A. Manville and F. G. Chuinard, 217
Pellagra, endemic (abstr.) 508
nature of (abstr.) 427
Personnel, association projects (sup.) *75*
changes under economic pressure (c.c.) 156
procedure within the dietary department, J. W. Vanden Bosch, 123
Pigott, M. G. (*see* Holmes)
Pixley, A., The Green Mountain cook book (book rev.) 504
Placement bureau board report (sup.) *61*
committees (a.p.) 265
Poisoning, arsenic, by pies (abstr.) 245
Pregnancy, human, acid-base balance in (abstr.) 64
Preservation, food, in Labrador (abstr.) 247
President, The (ed.) 334
President's message (a.p.) 66, 168, 264, 365, 431, 513
report (sup.) *3*
President-elect's report (sup.) *17*
Professional Education Section report (sup.) *46*
labels (c.c.) 159
Program suggestions for dietetic associations (a.p.) 436
Protein and vitamin G (abstr.) 429
Proudfit, F. T., Nutrition and diet therapy (book rev.) 345
Publicity chairman's report (sup.) *68*

Reineke, R., Librarian's report (sup.) *64*
Relief administration, nutrition work and (abstr.) 247
diet and (abstr.) 511
Emergency, and the dietitian, M. M. Heseltine, 407
program in the hospital (c.c.) 50
program, county hospital and community (c.c.) 48
Progress in national (ed.) 45
unemployment, special diets and (c.c.) 52
Reproduction and lactation, fat-free diets in (abstr.) 350

Resolutions (sup.) *74*
RICHARDSON, L., Administrators wanted, 459
Rickets in relation to caries (abstr.) 60
Ritchie, M., Secretary's and membership chairman's reports (sup.) *23*
ROBERTS, L. J. (and Carlson and MacNair) The supplementary value of dry skim milk in institution diets, 317
RORER, S. T., Early dietetics, 289
Roughage, influence of, on protein digestibility (abstr.) 167
Rowland, J., Rowland's diabetic cook book (book rev.) 506

SALTER, W. T., Quantitative aspects of vitamin requirement, 296
Salts, diets poor in (abstr.) 509
SAWYER, W. A. (*see* Holmes)
SCHELL, E. H., The dietitian as an administrator, 464
Secretary's report (sup.) *23*
Shaw, M. M., Scandinavian recipes (book rev.)
Sherbon, F. B., The child (book rev.) 422
Sherman, H. C., Food and health (book rev.) 422
Sinusitis in children (abstr.) 349
Sleep, Experimenting with foods and, I. Effects of varying types of food in offsetting sleep disturbances caused by hunger pangs and gastric distress—children and adults, D. A. Laird and H. Drexel, 89
  pattern for children, normal (abstr.) 62
Sleeplessness, effects of prolonged (abstr.) 60
SMITH, S. L., Newer trends in nutrition, 107
Social service, food problems in (c.c.) 54
Sorghum and sugar-cane syrups, iron content of (abstr.) 351
Soy-bean carbohydrate, biological availability of (abstr.) 167
STANLEY, L., What the Bureau of Home Economics does for the consumer, 401
Step, a forward (a.p.) 270
Sterility, male, on fat-free diets (abstr.) 350
Stomach, mucilaginous substances and emptying time of (abstr.) 507
STONER, N. B. (*see* Brown)

Thyroid, specific metabolic function of (abstr.) 166
Treasurer's report (sup.) *18*
TROUTT, L., Chairman's report, Diet Therapy Section (sup.) *41*
  The problem of cleanliness in food handling, 24
Tuberculosis and malnutrition, concentrated diet in childhood (abstr.) 349

Ulcer, peptic, okrin in (abstr.) 507

Vacations, question of (a.p.) 519
VANDEN BOSCH, J. W., Personnel procedure within the dietary department, 123
Victor, Sister M., Diet manual, St. Mary's Hospital (book rev.)
Vitamin content of human tissues (abstr.) 350
  requirement, Quantitative aspects of, W. T. Salter, 296
  research, Some recent trends in, R. A. Dutcher, 476
Vitamin A, absorption of (abstr.) 511
  absorption and storage of (abstr.) 509
  and carotene, utilization of (abstr.) 428
  and colds (abstr.) 245, 507, 511
  content of butter, how influenced (abstr.) 166
  deficiency, method for determining moderate degrees of (abstr.) 63
  deficiency, dermal manifestations of (abstr.) 63
  nutritional significance of (abstr.) 348
Vitamin B, effectiveness of natural fats in sparing (abstr.) 429
Vitamin D in blood and milk (abstr.) 350
  and calcium in foods (abstr.) 349
  studies (abstr.) 427
Vitamins A and D, The prophylactic effect of upon the prevention of the common cold and influenza, H. H. Beard, 193
Vitamins, fat soluble, effect of mineral oil administration upon (abstr.) 247
  natural pigments and (abstr.) 246

Warmington, H. S., Historian's report (sup.) *64*
Welfare agencies, coöperation with (c.c.) 157
  clinic dietitian and community (c.c.) 417
  work, home economist in family (c.c.) 241
WHEELER, R. (and Mallay) A study of food freely selected by a college coöperative housekeeping group, 453

Whitacre, J., The diet of Texas school children (book rev.) 161
Who's who in this issue, 82, 186, 282, 375, 444, 527
Wilder, R. M., A primer for diabetic patients (book rev.) 243
Winger, E. M., Membership campaign (sup.) 67, (a.p.) 513
Wood, M. A. (*see* McAuley)
Work, fuel of muscular (abstr.) 246
Worker, Fitting the, to the job (ed.) 232
Wound healing, some factors in (abstr.) 166

Xerophthalmia, nutritional (abstr.) 428

Yeast, A study of the therapeutic value of, F. A. Brown, M. B. Campbell, N. B. Stoner and I. G. Macy, 29